DELINEATION OF JURISDICTIONAL WATERS AND BIOTIC REPORT FOR SAN FRANCISCO WATER DEPARTMENT, BAY DIVISION PIPELINES NO'S. 3 AND 4 CROSSINGS OF THE GUADALUPE RIVER

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EXECUTIVE SUMMARY

H.T. Harvey and Associates conducted surveys of the San Francisco Water District pipeline crossings of the Guadalupe River in October, 1992 for areas potentially subject to the regulatory jurisdiction of the U.S. Army Corps of Engineers (USACE), under Section 10 of the Rivers and Harbors Act (1899), and Section 404 of the Clean Water Act (1972).

In addition, field surveys of the San Francisco Water Department Bay Division Pipeline Numbers 3 and 4 (SFWD BDPL) project site were conducted between June and October, 1992. The function of these surveys was to map plant communities within the project boundaries, to identify plants found on site, and to determine the presence of special-status plant and wildlife species and their habitats. Surveys were also conducted for other biotic resources subject to regulation.

Approximately 0.6 acres of jurisdictional "Waters of the United States" (Waters) were found on the project site consisting of both Section 10 and Section 404-jurisdictional areas.

No special-status plant or wildlife species, or critical habitat for these species, shellfish beds, spawning areas nor significant waterfowl breeding areas were found within the project area.

Construction techniques to be used in the relocation of the SFWD pipelines will minimize disturbance to aquatic resources. Mitigation will consist of returning the site to preconstruction contours with native topsoil. In addition, levee banks will be seeded with an erosion control seed mix to control erosion of disturbed banks.

INTRODUCTION

Background

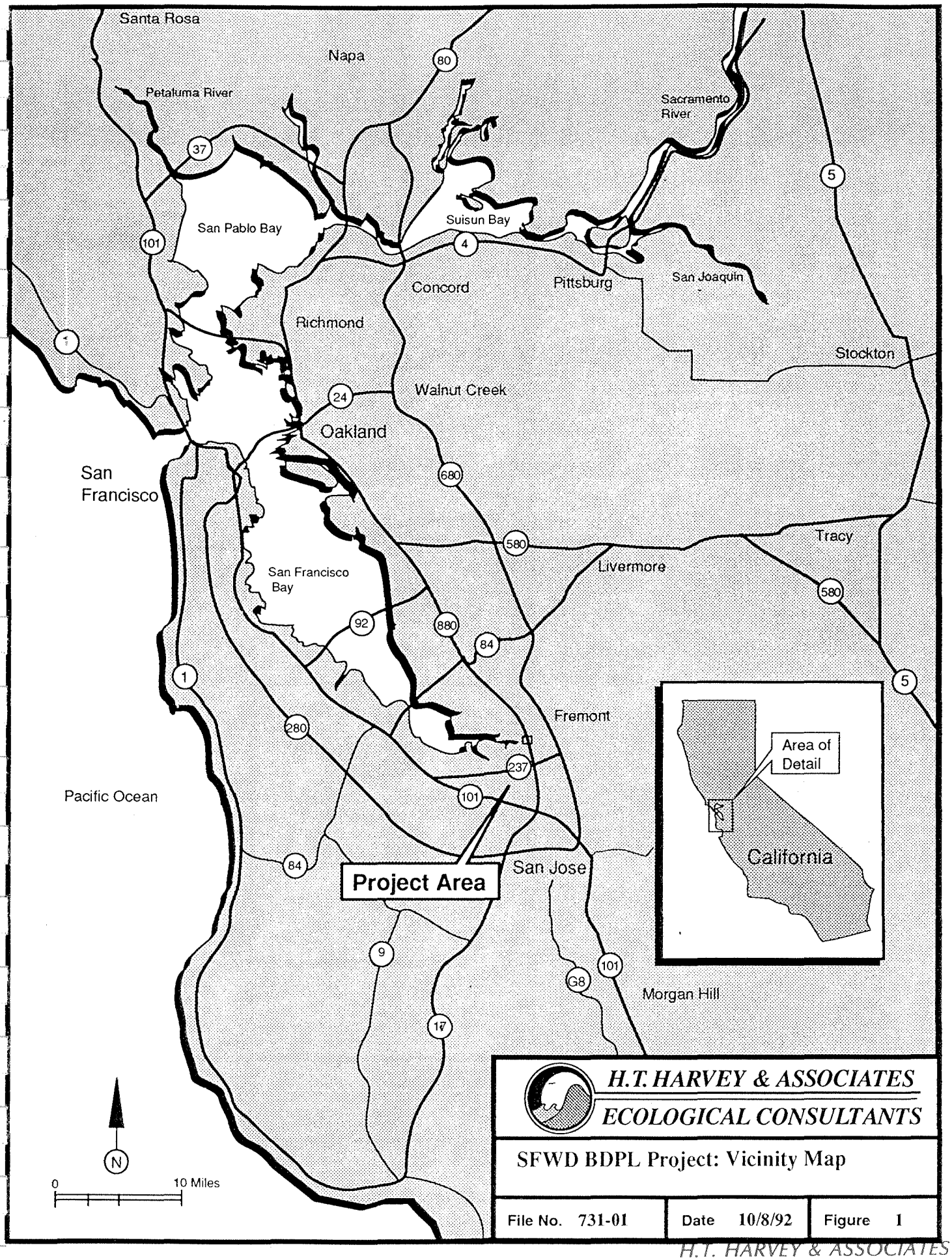
The Santa Clara Valley Water District (SCVWD) is proposing to relocate the San Francisco Water Department (SFWD) water pipelines at their current crossing of the Guadalupe River. The two pipelines are currently located aboveground and are considered an obstruction to the one-percent flood event on the Guadalupe River. The pipelines are proposed to be relocated under the river at approximately the same location. Relocation of the pipelines will require temporary disturbance of the banks, bed and channel of the river. The total size of the area to be affected by the pipeline relocation at the Guadalupe River is approximately 1.0 acres.

Each side of the water pipeline will be installed below ground in a trench up to the low-flow channel of the Guadalupe River. Flow of the river will then be temporarily diverted into a pipe of sufficient size to allow water flow while the connection of the pipeline is completed. Each water pipeline will be constructed separately. The pipeline will be encased in a jacket of concrete. Native material taken from the river bed will be placed on top of the concrete encasement. The low-flow channel will be returned to its original location matching upstream and downstream lines. Levee banks will be seeded with an erosion control seed mix upon completion of construction.

The purpose of this report is to delineate potential jurisdictional "Waters of the United States" (Waters), to provide a description of the existing biological conditions of the project site and to assist the U.S. Army Corps of Engineers (USACE) in determining whether the project is consistent with permit conditions of its regulatory programs.

Project Area Description

The San Francisco Water Department Bay Division Pipelines Numbers 3 and 4 (SFWD BDPL) project site is located in the northwestern portion of the Santa Clara Valley (Fig. 1). It is located west of North First Street, and southwest of the intersection of Tasman Drive and Rio Robles Drive (Fig. 2). The Guadalupe River forms the boundary between the Cities of Santa Clara and San Jose. It flows northwest through San Jose across the project site, eventually merging with Alviso Slough. The river empties into lower San Francisco Bay and is tidal at the crossing of the SFWD pipelines. The pipeline crossing is accessible from the parking lot of K.L.A. Instruments Corp. from the east and from Lick Mill Boulevard from the west. The project site occurs on the U.S. Geological Survey map, Milpitas, California Quadrangle (township 6, south; range 1, west).



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SFWD BDPL Project: Vicinity Map

File No. 731-01	Date 10/8/92	Figure 1

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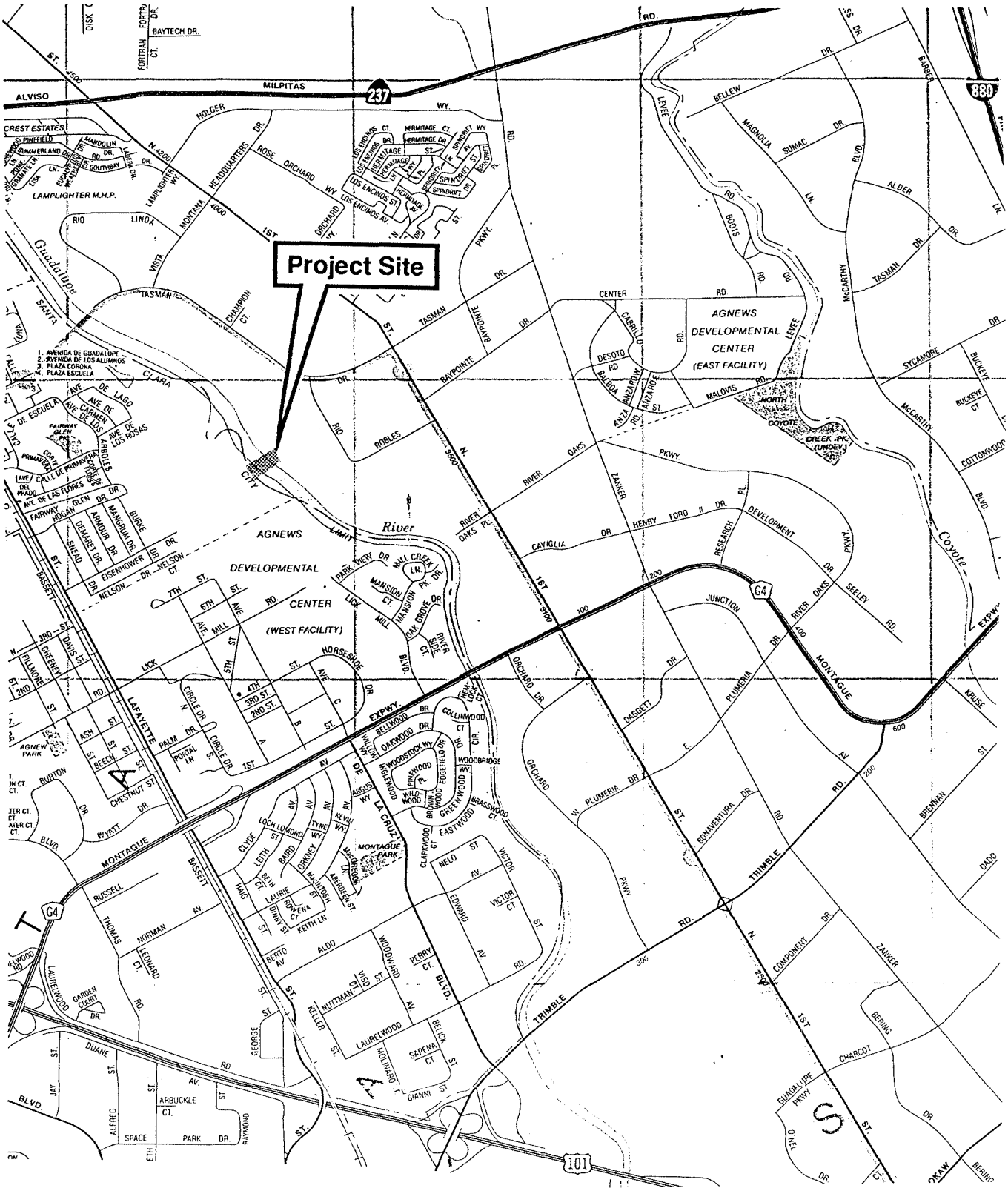

SCALE

FEET 0 1000 2000 3000 4000 5280 FEET

MILES 0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 MILES

METERS 0 200 400 600 800 1000 METERS

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SFWD BDPL Project: Site Map

File No. 731-01	Date 10/8/92	Figure 2

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DELINEATION OF JURISDICTIONAL WATERS

METHODS

Hydrologic Studies

Mean High Water (MHW) and the High Tide Line (HTL) of the Guadalupe River at the SFWD pipeline crossings were determined in order to allow distinction between Section 10 and Section 404-jurisdictional areas.

The MHW mark for the project location was determined directly from tidal records and was used to define the Section 10-jurisdictional area within the project site. The MHW mark at the pipeline crossing was extrapolated from the MHW records of the Alviso Slough/Coyote Creek gaging station. The MHW mark at the Alviso Slough/Gold Street bridge gaging station was obtained by correlating the MHW and the Mean Higher High Water (MHHW) records.

To determine the area under jurisdiction of Section 404, the HTL was taken as approximately equal to (MHHW). The HTL (MHHW) mark at the pipeline crossing was extrapolated from the HTL (MHHW) records at the Alviso Slough/Coyote Creek gaging station and the Alviso Slough/Gold Street bridge gaging station.

Section 10-Jurisdictional Waters

The project site was examined for "jurisdictional waters" in October, 1992. For the SFWD pipeline project, such waters included areas regulated under Section 10 of the Rivers and Harbors Act (1899), and waters regulated under Section 404 of the Clean Water Act (1972). Survey methodologies and results are described below.

Section 10-jurisdictional waters are found between the MHW marks on the opposing banks. Mean high water of the Guadalupe River was determined at the SFWD pipeline crossings in order to distinguish between waters under jurisdiction of Section 10 and areas under Section 404-jurisdiction. The mean high water mark for the project location was determined directly from tidal records as described above.

Section 404-Jurisdictional Waters

Section 404-jurisdictional waters included areas delineated by the HTL and adjacent

wetlands. The HTL mark for the project location was determined directly from tidal records as described above. Jurisdictional wetlands were identified according to methods described below.

The flora, soils, and hydrology of the SFWD BDPL site was examined following the guidelines outlined in the "Routine Determination Method" of the *Corps of Engineers Delineation Manual* (Environmental Laboratory 1987).

The site was examined for topographic features, drainages, and areas of significant recent disturbance by means of a random walk. A determination was then made as to whether normal environmental conditions were present at the time of the field surveys. A total of 20 representative observation areas were selected in and near areas potentially meeting the technical criteria of jurisdictional wetlands. These observation areas were selected for the purpose of documenting which areas of the site met the technical criteria of jurisdictional wetlands and delineating their extent.

Vegetation. Plants observed at each representative observation area on the site were identified to species, where necessary using standard floras appropriate for central California. Such floras included *A California Flora and Supplement* (Munz and Keck 1973), *A Flora of the Marshes of California* (Mason 1969), *Manual of the Grasses of the United States* (Hitchcock 1971), and *Weeds of California* (Robbins et al. 1970). The wetland indicator status of each species was obtained from the 1988 Wetland Plant List, California (Reed 1988). A list of species for each observation area was then compiled and an assessment of the dominant species made. It was then determined which observation areas supported wetland vegetation.

Wetland indicator status of plants species encountered at the site were designated as described in the *Corps of Engineers Delineation Manual* (Environmental Laboratory 1987). A complete listing of the vascular plants of the project site, and their current indicator status has been provided in Appendix A.

Soils. Where possible, the top 22 inches of the soil profile of each of the 20 representative observation areas were examined for hydric characteristics which include mottling indicated by the presence of gleyed or bright spots of colors. Munsell Soil Notations (Munsell Soil Color Charts, Kollmorgen Instr. Corp. 1990) were recorded for the soil matrix for each soil sample. The last digit of the Munsell Soil Notation refers to the chroma of the sample. This notation consists of numbers beginning with 0 for neutral grays and increasing at equal intervals to a maximum of about 20. Chroma values of the soil matrix which are one (1) or less, or of two (2) or less when mottling is present, are typical of soils which have developed

under anaerobic conditions.

The soil survey, Soils of Santa Clara County, California, (Soil Conservation Service 1968) was consulted in order to determine which soil types have been mapped on the project site. A list of hydric soils in Santa Clara County was also consulted to see which soils on the project site have been identified as hydric. Descriptions of soil mapping units, a map showing the location of those mapping units, and the list of hydric soils in Santa Clara County have all been included in Appendix C.

Hydrology. Each of the 20 observation areas were examined for positive field indicators of wetland hydrology. Such indicators might include an aquic or peraquic moisture regime, oxidized rhizospheres (root channels), water marks, drift lines, water-borne sediment deposits, water-stained leaves, and hydric soils characteristics.

The boundaries of each area meeting the technical criteria of a jurisdictional wetlands were determined, in part, from aerial photo interpretation (using a blue-line of an aerial photograph taken recently at a scale of 1" = 40') which was subsequently verified using ground information generated at each of the 20 observation areas. Areas meeting all of the technical criteria of jurisdictional wetlands were mapped onto a frosted-acetate overlay of the photograph. The boundaries of all areas identified were depicted on the map.

RESULTS

Hydrologic Studies

Water surface elevations (National Geodetic Vertical Datum; NGVD) for the Mean Tide (MT), MHW and HTL values for the two gaging station locations and the project site are presented below:

Location	Water Surface Elevation (ft. NGVD)		
	MT	MHW	HTL
Alviso Slough/Coyote Creek	0.5	3.7	4.3
Alviso Slough/Gold Street	0.6	4.3	4.9
SFWD /Guadalupe River	0.6	4.6	5.2

The MHW mark at the pipeline crossing was calculated to be 4.6 ft. (NGVD) with a channel top flow width of 120 ft. The area contained within the MHW marks located on the opposing sides of the river is approximately 0.33 acres (Fig. 3).

The HTL water surface elevation at the project site is approximately 5.2 ft. (NGVD); this yields a channel top flow width of 138 ft. The area between the MHW mark and the HTL on the east side of the river is approximately 0.04 acres. The area between the MHW and HTL marks on the west side of the river is 0.02 acres. The total area between the HTL marks is 0.39 acres (0.33 + 0.04 + 0.02 acres).

Areas Meeting the Technical Criteria of Jurisdictional Waters

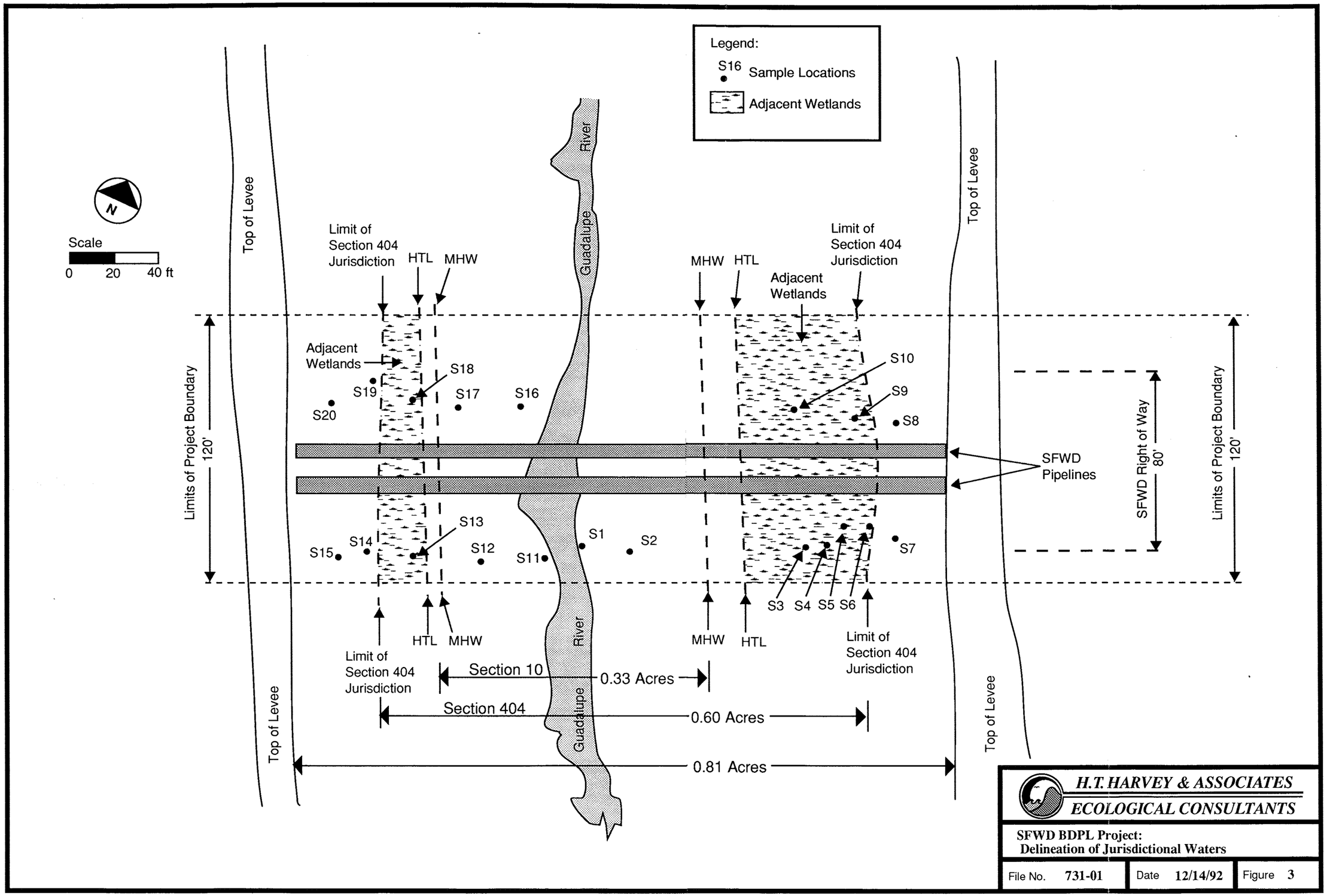
"Waters of the U.S." at the SFWD BDPL site include Section 10-jurisdictional and Section 404-jurisdictional waters. The total combined acreage of these waters on site was approximately 0.60 acres (Fig. 4).

Section 10-Jurisdictional Waters. Section 10-jurisdictional waters within the banks of the Guadalupe River at the project site include those areas defined by the the MHW mark on opposing banks of the river (see results of hydrology studies above). The total size of this area is approximately 0.33 acres (Fig. 3). A total of six sample locations were obtained from within this area (Appendix D).

These areas are primarily dominated by hydrophytic vegetation including California bulrush (*Scirpus californicus*; OBL), narrow-leaved cattail (*Typha angustifolia*; OBL), alkali bulrush (*Scirpus robustus*; OBL), giant reed (*Arundo donax*; FACW), perennial peppergrass (*Lepidium latifolium*; FACW) and Oregon yellow aster (*Chrysopsis oregona*; FAC?). Associate species include dotted knotweed (*Polygonum punctatum*; OBL), wild radish (*Raphanus sativus*; UPL), red willow (*Salix laevigata*; FACW), fat hen (*Atriplex patula* ssp. *hastata*; FACW) and cultivated beet (*Beta vulgaris*; FACU). A relatively large portion of the river bed on the east side of the river was covered with drift wood.

The soils in this stretch of the river have been mapped by the Soil Conservation Service (SCS 1968) as Pacheco loam, clay substratum. This soil phase has been identified as hydric (SCS 1991; Appendix C). Indicators of hydric soil conditions were observed in soil pits. Field evidence included matrices with low chroma (10 YR 4/2) and mottling (7.5 YR 5/8). The extent of mottling in these soil samples was very prominent. Other hydric soil indicators included soil gleying and oxidized root channels.

Direct evidence of wetland hydrology included the presence of algal mats, matted vegetation, drift wood and a cracked soil surface composed of fine soil sediments. All soil sample pits occured within the MHW mark.



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SFWD BDPL Project:
Delineation of Jurisdictional Waters

File No. 731-01	Date 12/14/92	Figure 3

Section 404-Jurisdictional Waters. Section 404-jurisdictional waters included the areas bounded by the HTL marks and adjacent wetlands. Adjacent wetlands extend from the HTL mark to the lower portions of the river banks (Fig. 3). A total of eight sample locations were observed within this area (Appendix D).

These wetlands are dominated by hydrophytic vegetation and include dotted knotweed (OBL), narrow-leaved cattail (OBL), fat hen (FACW), perennial peppergrass (FACW), Oregon yellow aster (FAC?), California bulrush (OBL) and alkali bulrush (OBL). Other species in the wetlands include giant weed (FACW), common California aster (*Aster chilensis*; FAC), sweet fennel (*Foeniculum vulgare*; FACU), wild radish (UPL), smallpod mustard (UPL), curly dock (FACW-), red willow (FACW), common sow-thistle (*Sonchus oleraceus*; NI), bristly ox-tongue (*Picris echioides*; FAC) and poison hemlock (*Conium maculatum*; FACW).

The soil phase within these areas is Pacheco loams, clay substratum; this soil is identified as hydric (SCS 1991). The banks of the Guadalupe River are composed of imported fill material. Hydric soil indicators included a low soil matrix color (10 YR 3/2; 10 YR 4/2), evidence of gleying on ped surfaces (10 YR 4/1) and mottling (7.5 YR 5/8). The extent of mottling varied from very prominent to relatively faint. Additional field evidence included the presence of oxidized root channels.

Evidence of wetland hydrology included matted vegetation, embedded drift wood in the soil surface, salt encrustations on the surface, cracked soil surface composed of finer sediments and algal mats.

Areas Not Meeting the Technical Criteria of Jurisdictional Waters

These areas generally extended from the top-of-bank down the inner levee slopes to the lower portion of the banks. A total of six sample positions were taken in these areas (Fig. 3 and Appendix D).

Upland and facultative species dominate the upper banks of the river. Vegetation includes coyote brush (*Baccharis pilularis* ssp. *consanguinea*; UPL), sweet fennel (FACU), wild radish (UPL), ripgut grass (*Bromus diandrus*; UPL), perennial peppergrass (FACW) and horseweed (*Conyza canadensis*; FAC).

Soil on the banks are composed of imported fill material. Hydric soil indicators were generally absent. This portion of the Guadalupe River was channelized in the 1950's and the banks were built up with fill material. If soils on the banks existed under an aquic or

peraquic moisture regime since the 1950's, indicators of hydric soils should have been observed. Most soil samples had a chroma of 7.5 YR 3/3; two samples had a low chroma (10 YR 2/1) with no mottling.

Hydrololgy indicators were generally absent from these areas.

Summary Table of the Delineation of Jurisdictional Waters

Site acreage from top-of-bank to top-of-bank	0.81 acres
Site acreage from edge of outer banks	1.00 acres
Section 10-Jurisdictional Waters	0.33 acres
Section 404-Jurisdictional Waters	0.60 acres
Total jurisdictional waters on site	0.60 acres

PERMIT CONDITIONS

The following section summarizes permit condition requirements for Nationwide Permit General Conditions (Appendix A to Part 330, C.1-13) , Nationwide Permit No. 12 Specific Conditions (Appendix A to Part 330, B.12) and Section 404 Conditions (Appendix A to Part 330, C). Details of each of these conditions are included within other sections of this document.

NATIONWIDE PERMITS-GENERAL CONDITIONS

Utility Line Backfill and Bedding. Project consists of trenching for relocation of two water utility pipelines underground.

Preconstruction Contours. Final contours will match preconstruction conditions.

Topsoil in Wetlands. The top several feet of the trench will be filled with native material.

Minimum Disturbance. The 120 foot-wide construction corridor is the minimum necessary to relocate the pipelines underground while keeping one line operational at all times.

Excess Material. Excess material will be disposed of at an upland location as it is generated during construction.

Slope Stabilization. Levee banks will be seeded with an erosion control seed mix upon completion of construction (see Appendix F).

Sidecasting of Material. Material from the trench will generally be removed during excavation; in no case shall material be sidecast into the channel for longer than five days.

NATIONWIDE PERMIT NO. 12-SPECIFIC CONDITIONS

Navigation. Temporary construction of channel will not adversely affect navigation; shallow depth of channel (approx. 8 ft.) currently limits most boat traffic.

Maintenance. Fill will be placed at pre-construction grades and will not need maintenance except for those occassional maintenance activities undertaken as part of the flood control project.

Erosion and Siltation Control. Measures will taken of minimize erosion and siltation

during construction activities within the channel. Levee banks will be seeded with an erosion control seed mix upon completion of construction (see Appendix F). The existing bulrush marsh is expected to rapidly recolonize within the channel after completion of construction.

Aquatic Life Movement. In order to minimize potential impacts to fish and wildlife species occuring within the channel aquatic habitat, all construction will be conducted outside of the normal rainfall season (April 15 to October 15). Diversion and restoration of the low-flow channel will occur at slack tide. Flow of the river will be temporarily diverted to the side of the existing low-flow channel. Permanent removal of the overhead structures will remove an existing barrier to some wildlife species such as birds which fly along the river corridor.

Use of Heavy Equipment. Where heavy equipment must be operated within the channel area, ramps will be built to protect channel bottom and vehicles with large rubber tires or tracks will be used.

Wild and Scenic Rivers. The Guadalupe River is not designated as a wild and scenic river.

Tribal Rights. No tribal rights are involved.

Water Quality Certification. A duplicate application has been concurrently submitted to the Regional Water Quality Control Board.

Coastal Zone Management. The project site is not subject to coastal zone management review.

Endangered Species. No special-status species or critical habitat are present on the site or the project vicinity (see the Biotic Survey section of this report).

Historic Properties. No historic properties will be affected (see Appendix E).

Notification. Notification is not required for NWP No. 12, however, this application serves as notification for both Section 10 and Section 404 portions of the project.

Wetlands Delineation. Delineation is included as part of this application.

Mitigation. Pre-construction contours will be returned to original configuration; levee slopes will be seeded.

SECTION 404-PERMIT CONDITIONS

Water Supply Intake. The site is tidal. No public water supply intakes occur in proximity to the project.

Shellfish Production. Concentrated shellfish production does not occur at the project site.

Suitable Material. Trench backfill will consist of concrete encasement around the pipelines which will be covered by native fill material.

Mitigation. Preconstruction contours will be returned; slopes will be seeded.

Spawning Areas. No spawning gravels are present at the project site.

Obstruction of High Flows. Diversion of flow will be temporary. Construction will be during the dry period of the year. By relocating the pipelines underground, the project will permanently remove an existing obstruction to the one-percent high flow.

Adverse Impacts from Impoundments. Temporary diversion structures will prevent impoundment of water, accelerated passage, or greater than minimal restriction of flow (see Appendix F).

Waterfowl Breeding Areas. The potential value of the habitat for use by migratory waterfowl is very limited. Discharges into potential waterfowl breeding areas are of short duration and involve a relatively small area. No impacts to migratory waterfowl will occur.

BIOTIC SURVEY

Field surveys were conducted between June and October, 1992. The function of these surveys was to map plant communities within the project boundaries, identify plants found on site, and to determine the presence of special-status plant and wildlife species and their habitats. Surveys were also conducted for other biotic resources subject to regulation.

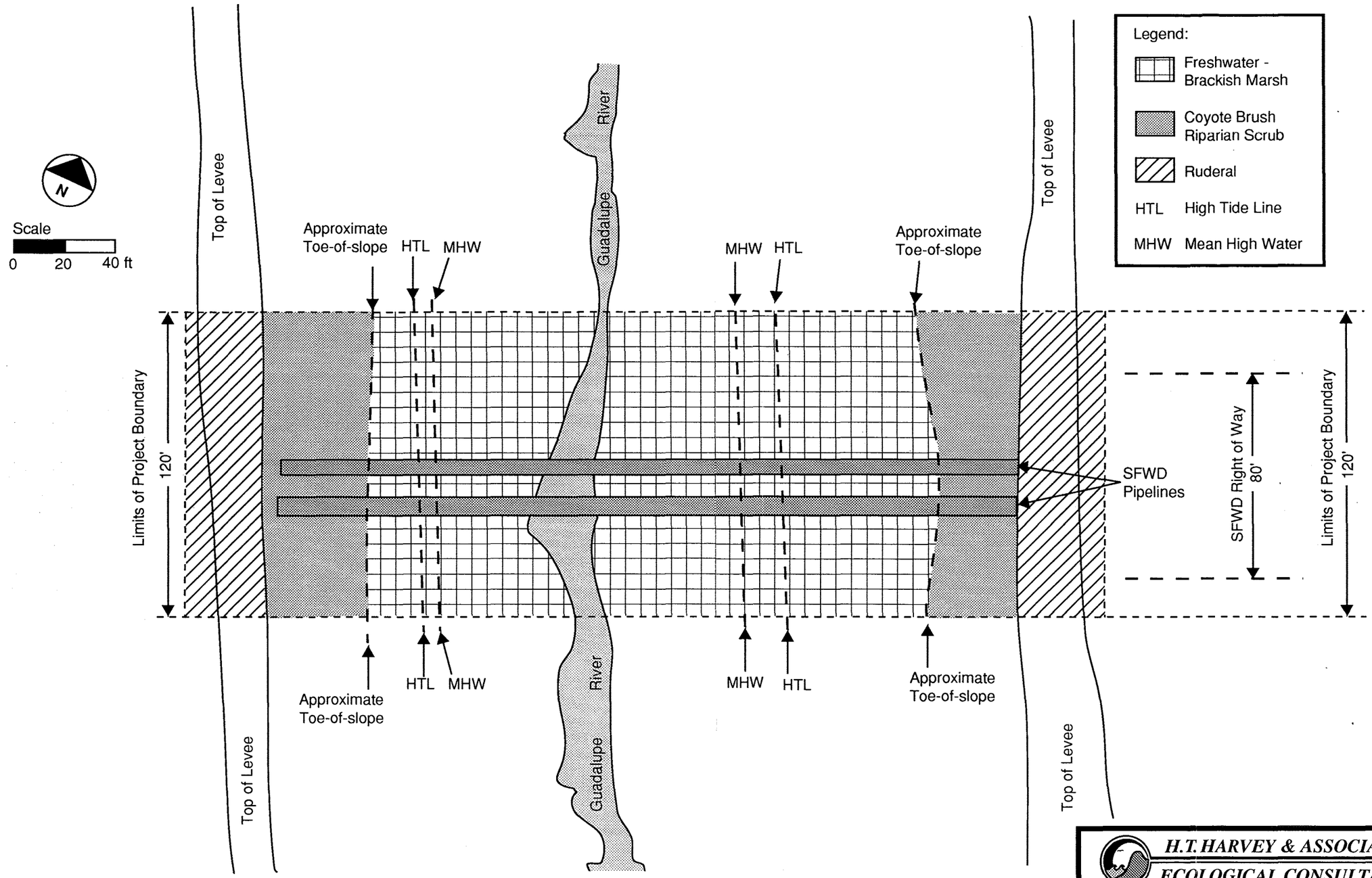
BIOTIC HABITATS OF THE PROJECT SITE

Plant communities of the project site include freshwater-brackish marsh, coyote brush riparian scrub and ruderal areas. Wherever possible, plant community designations follow the nomenclature of Holland (1986). A more detailed description of each of the plant communities is presented below.

Freshwater-Brackish Marsh

Vegetation. The freshwater-brackish marsh habitat occurs on both sides of the Guadalupe River within the high-flow channel. This area extends from the waters edge to the toe-of-slope on opposing banks (Fig. 4). A portion of this habitat is regularly inundated by tidal fluctuations of the river. The bed of the river channel and lower portion of the banks are dominated by hydrophytic vegetation including relatively dense stands of narrow-leaved cattail, California bulrush and perennial peppergrass. Other hydrophytes include dotted knotweed, fat hen, alkali bulrush, Oregon yellow aster, red willow and giant reed. Emergent vegetation occurs within the low-flow channel of the Guadalupe River including narrow-leaved cattail and California bulrush. A large portion of the project area, on the east bank of the river, is covered with drift wood.

Wildlife. Generally, these brackish marsh habitats support relatively few amphibian or reptile species. Pacific treefrogs, bullfrogs, western fence lizards, and alligator lizards are the most likely herpetiles on the site. Adult California red-legged frogs (federal candidate 1 species, California species of special concern) and southwestern pond turtles (federal candidate species 2 and California species of special concern) have been known to inhabit brackish marsh habitats with salt concentrations below 8 ppt (M. Jennings pers. comm.). However, these species would not be expected to breed in these habitats and would only occur in this area if they were washed downstream from the upper reaches of Guadalupe River. The potential presence of mosquito fish and bullfrogs are additional stress factors that minimize the possibility of California red-legged frogs persisting in the lower reaches



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SFWD BDPL Project:
Biotic Habitats of the Project Site

File No. 731-01	Date 10/14/92	Figure 4

of Guadalupe River. Therefore, it is highly unlikely that either of these special-status species occur on the project site on more than a casual basis, if at all. The freshwater-brackish marsh does not provide suitable habitat for the California Clapper Rail.

The freshwater-brackish marsh is relatively limited with respect to avian use due to the narrow extent of this habitat at the pipeline crossing. In addition, the channel margins are choked by emergent and upland vegetation which reduces its value to species of waterbirds that prefer areas of open water. Species that are resident in the area, and are likely to occur in the marsh, include Pied-billed Grebe, Great Blue and Black-crowned Night Herons, Great and Snowy Egrets, Mallard (may possibly breed if enough water is present during the reproductive period), American Kestrel, Common Moorhen, American Coot, Black Phoebe, Marsh Wren, European Starling, and Song Sparrow. Migrant birds that may breed, but not winter, on site, include Cliff Swallow (known breeder on the pipeline itself). Species that are likely to be found in migration, or winter, but are not likely to occur on the site during the reproductive period include Cinnamon and Green-winged Teal, Sharp-shinned and Cooper's Hawks (as occasional transients only), Belted Kingfisher, and Lincoln's Sparrow.

The salt marsh harvest mouse (state and federally endangered) and the salt marsh wandering shrew (federal candidate 1 species) are generally found in salt marshes dominated by pickleweed. The freshwater-brackish marsh of the lower reaches of the Guadalupe River is not suitable habitat for either one of these special-status mammals. Mammals that are expected to occur in this habitat include the California vole, house mouse, deer mouse, and Norway rat. Mammalian carnivores such as the long-tailed weasel and raccoon are expected to hunt or forage in the marsh. The Yuma myotis and little brown myotis may forage for insects over the river.

Coyote Brush Riparian Scrub

Vegetation. The coyote brush riparian scrub habitat occurs along the banks of the river and is dominated by coyote brush, perennial peppergrass and sweet fennel (Fig. 4). Herbaceous vegetation has invaded the upper portions of the bank and includes ripgut grass, smallpod mustard, bristly ox-tongue and smilo grass (*Oryzopsis miliacea*).

Wildlife. This habitat should support amphibian species such as the pacific treefrog and western toad during the non-reproductive period. Reptiles such as the western fence lizard, and southern alligator lizard should occur in this habitat on a relatively frequent basis.

Riparian scrub on the site is very limited and represents very little potential for avian use. A few species are likely to occur in the habitat as occasional foragers. These species are all quite common in the area and most, if not all, occur in a variety of habitats including this one. These species include: Mourning Dove, Bushtit, House Finch, and White-crowned, Golden-crowned and Song Sparrows.

Small mammals that are usually not found in the marsh habitat but would likely occur in the coyote brush riparian scrub include the California ground squirrel and Botta's pocket gopher. Other small mammals expected to occur in this scrub habitat include the California vole, house mouse, deer mouse, and Norway rat. Mammalian carnivores such as the long-tailed weasel and raccoon are expected to hunt or forage in this habitat. The Yuma myotis and little brown myotis may forage for insects over this scrub habitat.

Ruderal

Vegetation. The ruderal (disturbed) areas include the top of bank and extend down the sides of the river banks which face away from the river (Fig. 4). A dirt road exists on the top of the levees. Non-native annual grasses and forbs dominate the ruderal habitat and include ripgut grass, bristly ox-tongue, horseweed, prickly lettuce (*Lactuca serriola*), hairy wild oat (*Avena barbata*) and farmers's foxtail (*Hordeum leporinum*).

Wildlife. The ruderal areas support very little in the way of vegetation. Therefore, wildlife use of these areas will be relatively sporadic and noticeably less than the adjacent marsh and shrub habitats. Few amphibians will use these areas due to their relative dryness and lack of cover. Reptiles such as the southern alligator, western fence lizard, and gopher snake will occasionally forage in these areas.

Few avian species use this habitat to any extent, especially considering the limited extent of this habitat on the project site. Species that may occassionally use ruderal habitat on the site include Rock and Mourning Doves, House Finch, Brewer's and Red-winged Blackbird, and White-crowned, Golden-crowned, and Song Sparrows.

Some small mammals such as the California ground squirrel, Botta's pocket gopher, and house mouse will occasionally forage in this habitat. Mammalian carnivores such as raccoon and striped skunk may occasionally travel through these areas. Project construction activities within the channel are of a relatively short duration and marsh vegetation is expected to quickly re-establish, therefore, no substantial impacts to wildlife will occur.

BIOTIC RESOURCES SUBJECT TO REGULATION

Special-Status Plant Species and Their Habitats

Several plant species, which have been given special status under state and/or federal species legislation, are known to occur in the vicinity of the project site. A search of published accounts on the location of these species was conducted within the Milpitas Quadrangle (U.S. Geological Survey Topographical Quadrangle Map) using California Natural Diversity Data Base Rarefind reports (1992), Natural Resource Sensitivity Area Base Maps, Santa Clara County (H.T. Harvey and Associates) and the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (1988). In addition, the search was extended into each of the adjoining quads including: San Jose East, Cupertino, Mountain View, Newark, Niles, La Costa Valley, San Jose West and Calaveras Reservoir.

The following individuals were contacted (by telephone and correspondence) regarding the potential presence of special-status plant species on site: Jeannine DeWald, California Deparment of Fish and Game; Pete Sorensen, U.S. Fish and Wildlife Service. They indicated that no listed or proposed threatened or endangered plant species is expected to occur on the project site.

Field surveys were conducted for special-status plants between June and October, 1992. Surveys were performed in all biotic habitats within the property boundaries. The survey method involved hiking the areas in a zig-zag pattern throughout the entire site. In addition, surveys were conducted for various plant communities of special concern in the vicinity of the project site and known associate species of these special-status plants. These plant communities included serpentine bunchgrass, darlingtonia seep and north coastal salt marsh. Surveys were conducted during the late summer and early fall within the period of time when these species are readily identifiable. The surveys were conducted in sufficient detail to allow accurate conclusions to be made, within reasonable certainty, regarding the presence or absence of these species.

Surveys were conducted for the following special-status plant species at the SFWD BDPL project site Pt. Reyes bird's beak (*Cordylanthus maritimus* ssp. *palustris*), hispid bird's beak (*Cordylanthus mollis* ssp. *mollis*), Mason's lilaeopsis (*Lilaeopsis masonii*), delta tule pea (*Lathyrus jepsonii* ssp. *jepsonii*), marsh gumplant (*Grindelia humilis*), Suisun Marsh aster (*Aster chilensis* var. *lentus*), caper-fruited tropidocarpum (*Tropidocarpum capparideum*), Mt. Hamilton thistle (*Cirsium campylon*), Contra Costa Goldfields (*Lasthenia conjugens*), Metcalf Canyon jewelflower (*Streptanthus albidus* ssp. *albidus*), Santa Clara Valley dudleya

(*Dudleya setchellii*), valley oak (*Quercus lobata*), uncommon jewelflower (*Streptanthus albidus* ssp. *peramoenus*) and fragrant fritillary (*Fritillary lilieacea*). None of these species was observed on site during field surveys. No suitable habitat exists on site for these species. The project will have no impact upon special-status plant species. These species, their status, and the likelihood of their occurrence within the project area are described in Table 1.

Special-Status Vertebrate Species

A number of special-status vertebrate species occur in appropriate habitat in the region. These species included American Peregrine Falcon (*Falco peregrinus anatum*), Salt Marsh Harvest Mouse (*Reithrodontomys raviventris raviventris*), California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana aurora draytoni*), double-crested cormorant (*Phalacrocorax auritus*), white-faced ibis (*Eudocimus albus*), black-shouldered Kite (*Elanus caeruleus*), Northern Harrier (*Circus cyaneus*), Sharp-shinned Hawk (*Accipiter striatus*), Cooper's Hawk (*Accipiter cooperii*), Merlin (*Falco columbarius*), Burrowing Owl (*Athene cunicularia*), Loggerhead Shrike (*Lanius ludovicianus*), Salt Marsh Yellowthroat (*Geothlypis trichas sinuosa*), Tricolored Blackbird (*Agelaius tricolor*) and Salt Marsh wandering shrew (*Sorex vagrans halicoetes*). None of these species was observed on site during surveys. No suitable habitat exists on site for these species. The project will have no impact upon special-status wildlife species.

Field surveys were conducted for special-status animal species between June and September, 1992. These species, their status, and the likelihood of their occurrence within the project area are described in Table 1.

The following individuals were contacted (by telephone and correspondence) regarding the potential presence of special-status animal species, anadromous fish, shellfish and spawning areas on site: Jeannine DeWald, California Deparment of Fish and Game; Pete Sorensen, U.S. Fish and Wildlife Service; Michael Thabault, National Marine Fisheries Service. They indicated that no listed or proposed threatened or endangered species are expected to occur on the project site. The project site is inappropriate habitat for shellfish, anadromous fish and does not represent a spawning area, therefore, the project will have no impact upon these species.

Several special-status birds may occur on the site, however, most of these species are likely to occur on the site on a infrequent basis as transients (see Table 1). The freshwater-brackish marsh provides potential nesting habitat for Salt Marsh Yellowthroat (FC2) and Tri-colored Blackbird (FC2). However, neither species was detected on the site during

surveys and neither species is likely to occur on a regular basis due to the limited extent of habitat on the site. Surveys were also conducted for Burrowing Owls along the levee banks on 29 September, 1992. No Burrowing Owls were found on the top of the slopes of the levee. Nor were any potential Burrowing Owl burrows found on the levee within the project area.

Table 1. Special-status species, their status, and potential occurrence on the SFWD BDPL project site.

SPECIES		*STATUS	POTENTIAL FOR OCCURRENCE ON SITE
COMMON NAME	SCIENTIFIC NAME		
PLANTS			
Pt. Reyes Bird's Beak	Cordylanthus maritimus *ssp. palustris*	FC2, 1B	Unlikely, no suitable habitat; presumed absent from site.
Hispid Bird's Beak	*Cordylanthus mollis ssp. mollis*	FC1, SR, 1B	Unlikely, no suitable habitat; presumed absent from site.
Mason's Lilaeopsis	*Lilaeopsis masonii*	FC2, SR, 1B	Unlikely, no suitable habitat; presumed absent from site.
Delta Tule Pea	*Lathyrus jepsonii ssp. jepsonii*	FC2, 1B	Unlikely, no suitable habitat; presumed absent from site.
Marsh Gumplant	*Grindelia humilis*	List 4	Unlikely, no suitable habitat; presumed absent from site.
Suisun Marsh Aster	*Aster chilensis var. lentus*	FC2, 1B	Unlikely, no suitable habitat; presumed absent from site.
Caper-fruited Tropidocarpum	*Tropidocarpum capparideum*	FC2, 1A	Unlikely, no suitable habitat; presumed absent from site.
Mt. Hamilton Thistle	*Cirsium campylon*	FC2, 1B	Unlikely, no suitable habitat; presumed absent from site.
Contra Costa Goldfields	*Lasthenia conjugens*	FC1, 1B	Unlikely, no suitable habitat; presumed absent from site.
Metcalf Canyon Jewelflower	*Streptanthus albidus ssp. albidus*	FC1, 1B	Unlikely, no suitable habitat; presumed absent from site.
Santa Clara Valley Dudleya	*Dudleya setchellii*	FC1, 1B	Unlikely, no suitable habitat; presumed absent from site.
Valley Oak	*Quercus lobata*	List 4	Unlikely, no suitable habitat; presumed absent from site.
Uncommon Jewelflower	*Streptanthus albidus ssp. peramoenus*	FC1, 1B	Unlikely, no suitable habitat; presumed absent from site.
Fragrant Fritillary	*Fritillaria lilieacea*	FC2, 1B	Unlikely, no suitable habitat; presumed absent from site.
ANIMALS			
State or Federally Endangered or Threatened			
American Peregrine Falcon	*Falco peregrinus anatum*		Possible transient.
Salt Marsh Harvest Mouse	*Reithrodontomys raviventris raviventris*	FE, SE	No suitable habitat; presumed absent.
California Species of Special Concern, State Protected, or Federal Candidate Species			
California Tiger Salamander	*Ambystoma californiense*	FC2, S	Unlikely; no breeding habitat
California Red-legged Frog	*Rana aurora draytoni*	FC1, S	Unlikely; no breeding habitat.
Double-crested Cormorant	*Phalacrocorax auritus*	S	Possible forager on site.
White-faced Ibis	*Eudocimus albus*	S	May occur, observed locally; no breeding habitat.
Black-shouldered Kite	*Elanus caeruleus*	SP	May occasionally forage.
Northern Harrier	*Circus cyaneus*	S	Likely forager – no breeding habitat.

Table 1. Continued.

SPECIES		*STATUS	POTENTIAL FOR OCCURRENCE ON SITE
COMMON NAME	SCIENTIFIC NAME		
Sharp-shinned Hawk	*Accipiter striatus*	S	Possible transient.
Cooper's Hawk	*Accipiter coorperii*	S	Possible transient.
Merlin	*Falco columbarius*	S	Possible transient.
Burrowing Owl	*Athene cunicularia*	S	Possible on site – none observed during survey.
Loggerhead Shrike	*Lanius ludovicianus*	FC2	Possible occasional forager.
Salt Marsh Yellowthroat	*Geothlypis trichas sinuosa*	FC2	Possible transient – unlikely breeder.
Tricolored Blackbird	*Agelaius tricolor*	FC2, S	Unlikely, but possible transient.
Salt Marsh Wandering Shrew	*Sorex vagrans halicoetes*	FC1, S	No suitable habitat; presumed absent.

*, Federal, State, and California Native Plant Society listing designations.
FE = Designated as an endangered species by the federal government.
FT = Designated as threatened species by the federal government.
SE = Designated as an endangered species by the California Fish and Game Commission.
ST = Designated as a threatened species by the California Fish and Game Commission.
FC1 = Designated as a candidate species by the federal government. Occurrence on list 1 indicates that U.S. Fish and Wildlife Service has sufficient biological information to support a proposal to list the species as Endangered or Threatened.
FC2 = Designated as a candidate species by the federal government. Occurrence on list 2 indicates that U.S. Fish and Wildlife Service has potential information for upgrading listing to endangered or threatened, but conclusive data on the biological vulnerability and threat are not currently available to support proposed listing.
2R = "Recommend" for category 2 status by the U.S. Fish and Wildlife Service.
SCE = California Candidate for listing as Endangered.
S = Species of Special Concern, including species whose breeding populations in the state have declined severely or are otherwise so low that extirpation is a real possibility. There are no special legal statutes governing the protection of this group.
SP = Fully protected species in the state of California.
CNPS 1A = Plants presumed extinct in California.
CNPS 1B = Plants rare, threatened, or endangered in California, and elsewhere.
CNPS 2 = Plants rare, threatened, or endangered in California, but more common elsewhere.
CNPS 3 = Plants about which we need more information; a review list.
CNPS 4 = Plants of limited distribution; a watch list.

Potential Use of Site by Migratory Waterfowl. The potential value of the habitat for use by migratory waterfowl is very limited. The banks of the channel were choked with emergent vegetation and contained little open water at the time of the surveys. Mallards may breed in the project impact zone, but it is doubtful due to extensive cover of densely packed, tall, emergent vegeation, the limited size of the marsh habitat at the site, and the lack of even small areas of open water. Several species of ducks may occasionally use the site, especially when water levels rise and water inundates the floodplain at the site. This use, however, is probably quite limited, especially given the extent of the project impact area.

Compliance With the Migratory Bird Treaty Act. Surveys for Cliff Swallows were conducted in July, 1992. The remains of a colony of swallow mud nests were located beneath the water pipelines. Only two mud nests were intact at the time of the survey, however, the remains of over 250 nest sites were observed. Cliff Swallows nest colonially and nests are often so close together that they touch. The highest concentration of swallow nests were located towards the center of the pipelines directly over water in the low-flow channel of the Guadalupe River. These birds require sheltered locations for nest attachment, water and a source of mud nearby for nest construction.

Direct disturbance or destruction of active Cliff Swallow nests on the pipe would be a violation of the Migratory Bird Treaty Act. Most of the 1992 nests had already fallen off the pipe by the dates of the 1992 surveys (Cliff Swallows are early spring arrivals and fall departures in California and nesting is underway by March and completed by July in the region of the site). Construction should occur in the non-reproductive season. If construction cannot be limited to this period, the pipes should be rendered unusable by Cliff Swallows before the birds return for the breeding season. The pipes will be wrapped with hardware cloth or netting with a mesh size of 0.5 to 0.75 inch or some other material that cannot provide a surface for nest material attachment (personal communication, Dianne Petroule, USFWS). A permit is required from the U.S. Fish and Wildlife Service to remove nests.

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APPENDIX A
LIST OF VASCULAR PLANTS OBSERVED ON THE SFWD BDPL PROJECT SITE

Appendix A. List of vascular plants observed on the SFWD BDPL project site.

FAMILY NAME	SCIENTIFIC NAME	COMMON NAME	INDICATOR STATUS
BORAGINACEAE	*Heliotropium curassavicum ssp. oculatum*	seaside heliotrope	OBL
CHENOPODIACEAE	*Atriplex patula ssp. hastata*	fat hen	FACW
	Beta vulgaris	cultivated beet	FACU
COMPOSITAE	*Artemisia douglasiana*	California mugwort	FACW
	Aster chilensis	common California aster	FAC
	Baccharis pilularis ssp. consanguinea	coyote brush	UPL
	Carduus pycnocephalus	Italian thistle	UPL
	Chrysopsis oregona	Oregon yellow aster	FAC(?)
	Conyza canadensis	horseweed	FAC
	Jaumea carnosa	fleshy jaumea	OBL
	Lactuca serriola	prickly lettuce	FAC
	Picris echioides	bristly ox-tongue	FAC
	Sonchus oleraceus	common sow-thistle	NI
	Xanthium strumarium ssp. canadense	cocklebur	FAC+
CONVOLVULACEAE	*Convolvulus arvensis*	field bindweed	UPL
CRUCIFERAE	*Brassica geniculata*	smallpod mustard	UPL
	Lepidium latifolium	perennial peppergrass	FACW
	Raphanus sativus	wild radish	UPL
CYPERACEAE	*Scirpus californicus*	California bulrush	OBL
	Scirpus robustus	alkali bulrush	OBL
EUPHORBIACEAE	*Ricinus communis*	castor bean	FACU
GERANIACEAE	*Erodium cicutarium*	red-leaf filaree	UPL
GRAMINEAE	*Arundo donax*	giant reed	FACW
	Avena barbata	hairy wild oat	UPL
	Bromus diandrus	ripgut grass	UPL
	Elymus triticoides	creeping wild rye	FAC+
	Hordeum leporinum	farmer's foxtail	NI
	Oryzopsis miliacea	smilo grass	UPL
MALVACEAE	*Malva parviflora*	cheese weed	UPL
POLYGONACEAE	*Polygonum punctatum*	dotted knotweed	OBL
	Rumex crispus	curly dock	FACW-
SALICACEAE	*Salix laevigata*	red willow	FACW

Appendix A. Continued.

FAMILY NAME	SCIENTIFIC NAME	COMMON NAME	INDICATOR STATUS
SIMARUBACEAE	*Ailanthus altissima*	tree-of-heaven	FACU
SOLANACEAE	*Nicotiana glauca*	tree tobacco	FAC
	Solanum nigrum	black nightshade	FACU
TYPHACEAE	*Typha angustifolia*	narrow-leaved cattail	OBL
UMBELLIFERAE	*Conium maculatum*	poison hemlock	FACW
	Foeniculum vulgare	sweet fennel	FACU

The species list is arranged alphabetically by family name for all vascular plants encountered during a plant survey. Plants are also listed alphabetically within each family. In some cases it was not possible to accurately identify a particular plant to the species level due to the absence of specific anatomic structures required in identification.

The wetland status of each species is based upon U.S. Fish and Wildlife Service wetland plant designations, and are indicated as follows:

OBL - Obligate
FACW - Facultative wetland
FAC - Facultative
FACU - Facultative upland
UPL - Upland
+/- Higher/lower end of category
NR - No review
NA - No agreement
NI - No investigation

APPENDIX B
LIST OF ANIMAL SPECIES OF THE SFWD BDPL PROJECT SITE

APPENDIX B. LIST OF ANIMAL SPECIES OBSERVED OR EXPECTED TO OCCUR ON THE SFWD BDPL SITE.

SPECIES

CLASS: AMPHIBIA (Amphibians)

ORDER: SALIENTIA (Frogs and Toads)
FAMILY: BUFONIDAE (True Toads)
Western Toad (*Bufo boreas*)
FAMILY: HYLIDAE (Treefrogs and Relatives)
Pacific Treefrog (*Pseudacris regilla*)
FAMILY: RANIDAE (True Frogs)
Bullfrog (*Rana catesbeiana*)

CLASS: REPTILIA (Reptiles)

ORDER: SQUAMATA (Lizards and Snakes)
SUBORDER: SAURIA (Lizards)
FAMILY: IGUANIDAE (Iguanids)
Western Fence Lizard (*Sceloporus occidentalis*)
FAMILY: SCINCIDAE (Skinks)
Western Skink (*Eumeces skiltonianus*)
FAMILY: ANGUIDAE (Alligator Lizards and Relatives)
Southern Alligator Lizard (*Elgaria multicarinata*)

SUBORDER: SERPENTES (Snakes)
FAMILY: COLUBRIDAE (Colubrids)
Gopher Snake (*Pituophis melanoleucus*)

CLASS: AVES (Birds)

ORDER: PODICIPEDIFORMES (Grebes)
FAMILY: PODICIPEDIDAE (Grebes)
Pied-billed Grebe (*Podilymbus podiceps*)
FAMILY: PHALACROCORACIDAE (Cormorants)
Double-crested Cormorant (*Phalacrocorax auritus*)

Appendix B. Continued.

SPECIES

ORDER: CICONIIFORMES (Herons, Storks, Ibises, and Relatives)
FAMILY: ARDEIDAE (Herons and Bitterns)
American Bittern (*Botaurus lentiginosus*)
Great Blue Heron (*Ardea herodias*)
Great Egret (*Casmerodius albus*)
Snowy Egret (*Egretta thula*)
Green-backed Heron (*Butorides striatus*)
Black-crowned Night Heron (*Nycticorax nycticorax*)

ORDER: ANSERIFORMES (Screamers, Ducks, and Relatives)
FAMILY: ANATIDAE (Swans, Geese and Ducks)
Canada Geese (*Branta canadensis*)
Wood Duck (*Aix sponsa*)
Green-winged Teal (*Anas crecca*)
Mallard (*Anas platyrhynchos*)
Northern Pintail (*Anas acuta*)
Cinnamon Teal (*Anas cyanoptera*)
Northern Shoveler (*Anas clypeata*)
Gadwall (*Anas strepera*)
American Wigeon (*Anas americana*)
Ruddy Duck (*Oxyura jamaicensis*)

ORDER: FALCONIFORMES (Vultures, Hawks, and Falcons)
FAMILY: CATHARTIDAE (New World Vultures)
Turkey Vulture (*Cathartes aura*)
FAMILY: ACCIPITRIDAE (Hawks, Old World Vultures, and Harriers)
Black-shouldered Kite (*Elanus caeruleus*)
Northern Harrier (*Circus cyaneus*)
Sharp-shinned Hawk (*Accipiter striatus*)
Cooper's Hawk (*Accipiter cooperii*)
Red-tailed Hawk (*Buteo jamaicensis*)
FAMILY: FALCONIDAE (Caracaras and Falcons)
American Kestrel (*Falco sparverius*)
Merlin (*Falco columbarius*)
Peregrine Falcon (*Falco peregrinus*)

Appendix B. Continued.

SPECIES

ORDER: GRUIFORMES (Cranes, Rails, and Relatives)
FAMILY: RALLIDAE (Rails, Gallinules, and Coots)
Virginia Rail (*Rallus limicola*)
Sora (*Porzana carolina*)
Common Moorhen (*Gallinula chloropus*)
American Coot (*Fulica americana*)

ORDER: CHARADRIIFORMES (Shorebirds, Gulls, and Relatives)
FAMILY: LARIDAE (Gulls and Terns)
Ring-billed Gull (*Larus delawarensis*)
California Gull (*Larus californicus*)
Forster's Tern (*Sterna forsteri*)

ORDER: STRIGIFORMES (Owls)
FAMILY: TYTONIDAE (Barn Owls)
Common Barn Owl (*Tyto alba*)
FAMILY: STRIGIDAE (Typical Owls)
Burrowing Owl (*Athene cunicularia*)

ORDER: CORACIIFORMES (Kingfishers and Relatives)
FAMILY: ALCEDINIDAE (Kingfishers)
Belted Kingfisher (*Ceryle alcyon*)

ORDER: PASSERIFORMES (Perching Birds)
FAMILY: TYRANNIDAE (Tyrant Flycatchers)
Black Phoebe (*Sayornis nigricans*)
Say's Phoebe (*Sayornis saya*)
FAMILY: HIRUNDINIDAE (Swallows)
Tree Swallow (*Tachycineta bicolor*)
Violet-green Swallow (*Tachycineta thalassina*)
Northern Rough-winged Swallow (*Stelgidopteryx serripennis*)
Cliff Swallow (*Hirundo pyrrhonota*)
Barn Swallow (*Hirundo rustica*)

Appendix B. Continued.

SPECIES

FAMILY: CORVIDAE (Jays, Magpies, and Crows)
American Crow (*Corvus brachyrhynchos*)
Common Raven (*Corvus corax*)
FAMILY: AEGITHALIDAE (Bushtits)
Bushtit (*Psaltriparus minimus*)
FAMILY: TROGLODYTIDAE (Wrens)
Marsh Wren (*Cistothorus palustris*)
FAMILY: MUSCICAPIDAE (Old World Warblers, Gnatcatchers, Kinglets, Thrushes, Bluebirds, and Wrentit)
Ruby-crowned Kinglet (*Regulus calendula*)
FAMILY: LANIIDAE (Shrikes)
Loggerhead Shrike (*Lanius ludovicianus*)
FAMILY: STURNIDAE (Starlings)
European Starling (*Sturnus vulgaris*)
FAMILY: EMBERIZIDAE (Wood Warblers, Sparrows, Blackbirds, and Relatives)
Orange-crowned Warbler (*Vermivora celata*)
Yellow-rumped Warbler (*Dendroica coronata*)
Common Yellowthroat (*Geothlypis trichas*)
Savannah Sparrow (*Passerculus sandwichensis*)
Song Sparrow (*Melospiza melodia*)
Lincoln's Sparrow (*Melospiza lincolnii*)
Golden-crowned Sparrow (*Zonotrichia atricapilla*)
White-crowned Sparrow (*Zonotrichia leucophrys*)
Red-winged Blackbird (*Agelaius phoeniceus*)
Tri-colored Blackbird (*Agelaius tricolor*)
Brewer's Blackbird (*Euphagus cyanocephalus*)
Brown-headed Cowbird (*Molothrus ater*)
House Finch (*Carpodaius mexicanus*)

CLASS: MAMMALIA (Mammals)

ORDER: MARSUPIALIA (Opossums, Kangaroos, and Relatives)
FAMILY: DIDELPHIDAE (Opossums)
Virginia Opossum (*Didelphis virginiana*)

ORDER: INSECTIVORA (Shrews and Moles)
FAMILY: SORICIDAE (Shrews)
Ornate Shrew (*Sorex ornatus*)

Appendix B. Continued.

SPECIES

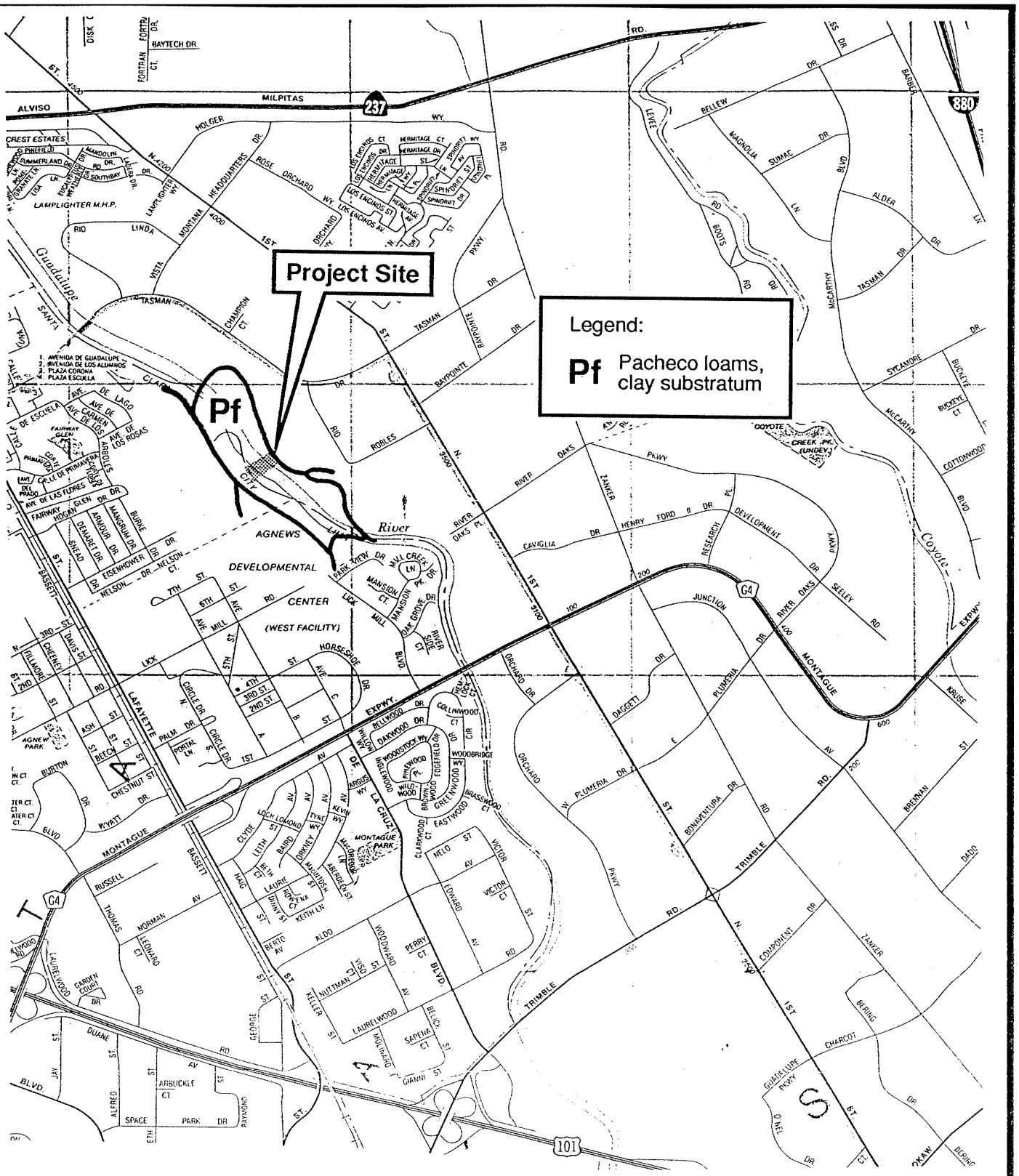
ORDER: CHIROPTERA (Bats)
FAMILY: VESPERTILIONIDAE (Vespertilionid Bats)
Yuma Myotis (*Myotis yumanensis*)
California Myotis (*Myotis californicus*)
Big Brown Bat (*Eptesicus fuscus*)
Red Bat (*Lasiurus borealis*)
Hoary Bat (*Lasiurus cinereus*)

ORDER: LAGOMORPHA (Rabbits, Hares, and Pikas)
FAMILY: LEPORIDAE (Rabbits and Hares)
Brush Rabbit (*Sylvilagus bachmani*)
Desert Cottontail (*Sylvilagus audubonii*)
Black-tailed Hare (*Lepus californicus*)

ORDER: RODENTIA (Squirrels, Rats, Mice, and Relatives)
FAMILY: SCIURIDAE (Squirrel, Chipmunks and Marmots)
California Ground Squirrel (*Spemophilus beecheyi*)
FAMILY: GEOMYIDAE (Pocket Gophers)
Botta's Pocket Gopher (*Thomomys bottae*)
FAMILY: HETEROMYIDAE (Pocket Mice and Kangaroo Rats)
California Pocket Mouse (*Perognathus californicus*)
FAMILY: CRICETIDAE (Deer Mice, Voles, and Relatives)
Deer Mouse (*Peromyscus maniculatus*)
California Vole (*Microtus californicus*)
FAMILY: MURIDAE (Old World Rats and Mice)
Black Rat (*Rattus rattus*)
Norway Rat (*Rattus norvegicus*)
House Mouse (*Mus musculus*)

ORDER: CARNIVORA (Carnivores)
FAMILY: CANIDAE (Foxes, Wolves, and Relatives)
Red Fox (*Vulpes vulpes*)
FAMILY: PROCYONIDAE (Raccoons and Relatives)
Raccoon (*Procyon lotor*)
FAMILY: MUSTELIDAE (Weasels, Badgers, and Relatives)
Long-tailed Weasel (*Mustela frenata*)

APPENDIX C
SOILS OF THE SFWD BDPL PROJECT SITE



N

SCALE

FEET 0 1000 2000 3000 4000 5280 FEET

MILES 0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 MILES

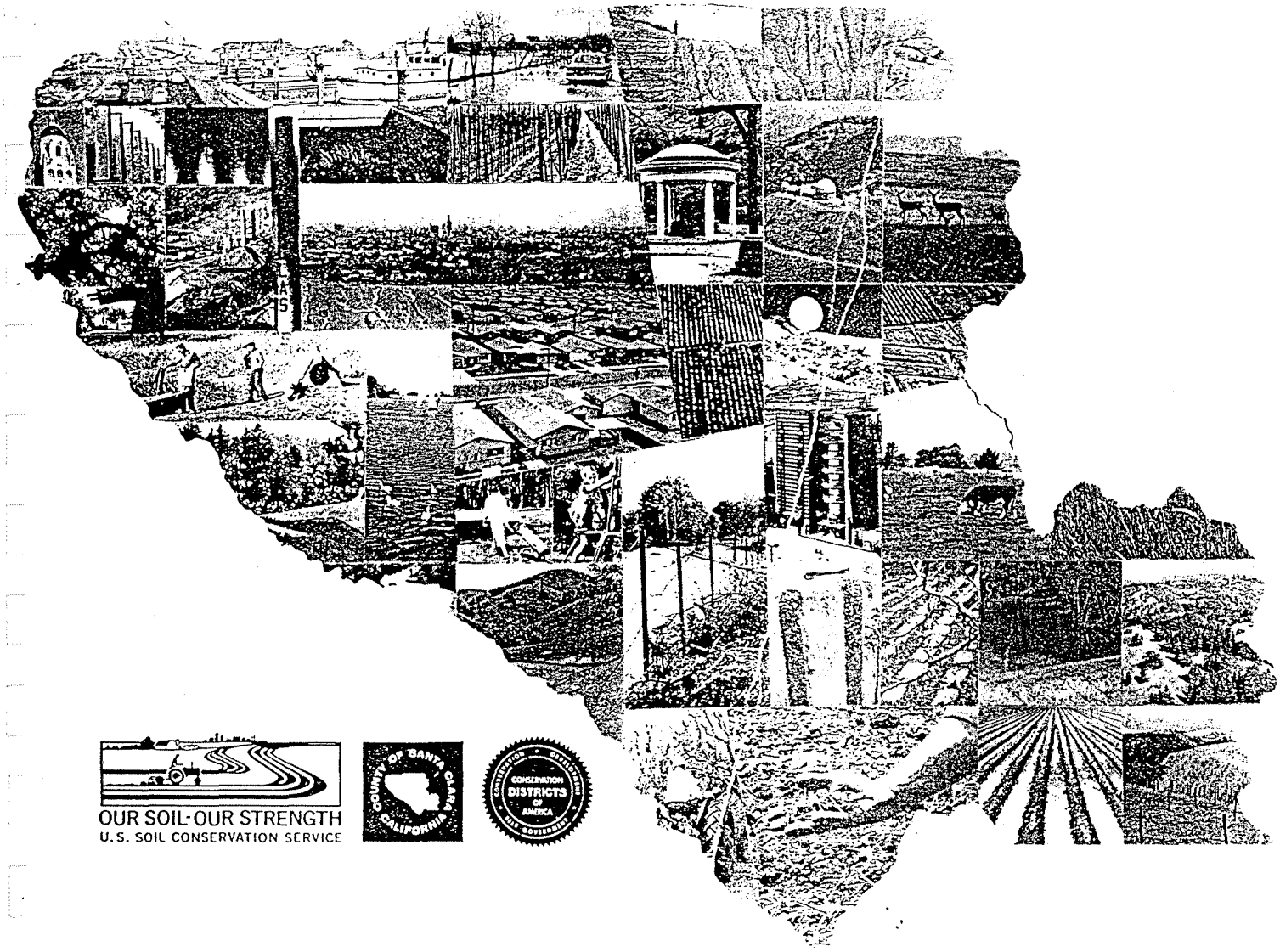
METERS 0 200 400 600 800 1000 METERS

H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

SFWD BDPL: Soil Phases Map

File No. 731-01	Date 10/8/92	Figure C-1

SOILS OF SANTA CLARA COUNTY



Prepared by the United States Department of Agriculture, Soil Conservation Service, in cooperation with and for the County of Santa Clara Planning Department, the Santa Clara County Flood Control and Water District, and the Black Mountain, Evergreen, and Loma Prieta Soil Conservation Districts.

Orestimba clay loam (Of). This soil is similar to Orestimba silty clay loam, except surface texture is clay loam, and concentration of salts is only slight. Natural drainage is now moderately well because of the general lowering of ground water level in the valley. Average water holding capacity is 9 to 10 inches and fertility is moderate. Most of this soil occupies small level basins east and southeast of San Jose. Included in mapping are areas of Sunnyvale silty clay 10 percent; 5 percent Clear Lake clay; also, a few small areas of moderate to strong concentrations of both neutral and alkaline salts.

This soil is used for irrigated row crops, prunes, pears, dryland hay and pasture. A few areas have been used for housing developments. Capability unit IIIw5 (14).

PACHECO SERIES

The Pacheco series consists of poorly drained, medium textured soils, underlain by sedimentary alluvium. These soils formed on low level alluvial plains. Vegetation is annual grasses and forbs. Elevations range from 150 to 300 feet. Mean annual rainfall is 16 to 20 inches; mean annual air temperature is 58 to 60° F. The growing season is 250 to 300 days. Clear Lake, Yolo, and Willows are the principal associated series.

The surface soil averages 14 to 18 inches in thickness and is a moderately alkaline, grayish brown fine sandy loam, loam, silt loam and clay loam. The subsoil is a mottled light gray, moderately alkaline loam averaging 18 to 25 inches in thickness. The substratum is light gray mottled calcareous, medium textured alluvium.

Pacheco soils are used for irrigated sugar beets, row crops, orchards, pasture and hay.

Pacheco clay loam (Pd). This soil occurs on level low positions of the alluvial plains.

Representative profile: In a field 1/10 of a mile west of pump number 1 on Taix Company ranch; Santa Clara County, California.

Ap 0 to 7 inches, grayish brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate, fine granular structure; hard, friable, sticky and plastic; many fine interstitial and fine tubular pores; moderately alkaline (pH 8.0); clear smooth boundary. (6 to 8 inches thick).

A12 7 to 16 inches, grayish brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate, medium subangular blocky structure; hard, friable, sticky and plastic; many fine interstitial and tubular pores; moderately alkaline (pH 8.0); clear smooth boundary. (8 to 10 inches thick).

C1g 16 to 35 inches, light gray (10YR 6/1) loam, gray, (10YR 5/1) moist; many fine distinct mottles brown (10YR 5/3) dry and dark brown (10YR 4/3) moist; massive; hard, friable, nonsticky and nonplastic; moderately alkaline (pH 8.3); clear smooth boundary. (18 to 25 inches thick).

C2g 35 to 60 inches, light gray (10YR 6/1) very fine sandy loam, gray (10YR 5/1) moist; many large distinct mottles brown (10YR 5/3) dry; dark brown (10YR 3/3) moist; massive; hard, friable, nonsticky and nonplastic; slightly calcareous, moderately alkaline (pH 8.0).

Surface soil color is grayish brown and dark gray. Reaction is mildly to moderately alkaline. Texture is clay loam or silty clay loam. Structure is moderate, fine and medium granular or subangular blocky. Colors of the subsoil may be light brownish gray, light gray or gray with brown and pale brown mottles.Lime is usually present and the reaction is moderately alkaline. Textures are stratified sandy loam to silty clay loam, averaging between 10 to 40 percent clay and more than 15 percent sand. Mottling is usually present at an average depth just over 16 inches.

Included in mapping this soil are 5 percent areas of Clear Lake clay; and similar soils that are calcareous on the surface.

This poorly drained soil holds about 6 to 8 inches of water plants can use. Fertility is moderate and subsoil permeability is moderate. Surface runoff is very slow and this soil is flooded about twice every ten years. Plant rooting depth is limited at an average depth of 36 to 50 inches by the seasonal water table.

This soil is used for irrigated row crops and sugar beets. Early crops are usually destroyed when this soil is flooded. Capability unit IIw2 (14).

Pacheco fine sandy loam (Pa). This soil occurs in low positions southeast of Gilroy, where it is flooded about twice every ten years. Color of the surface is grayish brown. Surface texture may be sandy loam or silt loam, but is usually fine sandy loam. Rooting depth is limited at depths of 36 to 50 inches by a seasonal water table. Average water holding capacity is 5 to 7 inches. Otherwise, this soil is similar to Pacheco clay loam. Included in mapping are 5 percent areas of Clear Lake clay; areas of gravelly texture; and small spots of neutral salt concentrations. Along Carnadero Creek east of Miller railroad siding, about 100 acres of soils with a much substratum.

This soil is used for irrigated row crops and sugar beets. Capability unit IIw2 (14).

Pacheco silt loam, drained (Pb). Except for texture of the surface soil being a silt loam, and the soil holds about 8 to 10 inches of water plants can use, this soil is similar to Pacheco

clay loam. Rooting depth is over 60 inches because of a generally lowering of the water table that existed during soil development. It has been flooded in the past about once every 25 years. Included in mapping are 10 percent areas of Yolo loam; and 5 percent areas of gravelly texture.

This soil is used for irrigated row crops, sugar beets, cherries, prunes, walnuts, hay and pasture. Capability unit I-1 (14).

Pacheco clay loam, gravelly substratum (Pe). This soil occurs as gravelly stringers, geographically intermixed with the Pacheco and Campbell soils. Surface soil color is grayish brown or dark gray. Texture may be a loam, clay loam or gravelly clay loam. In general, water tables are below 5 feet, but a few areas have seasonal water tables within 3 feet of the surface that will somewhat restrict rooting depth. The substratum, at an average depth of 36 to 40 inches is sand and gravel. Average water holding capacity is 6 to 8 inches; subsoil permeability is moderately rapid. Otherwise, it is similar to Pacheco clay loam. Included in mapping are areas of sand and gravel, within 20 inches of the surface; and a few areas of pale brown loam 10 to 15 inches in thickness over the normal grayish brown loams.

This soil is used for irrigated row crops, sugar beets, prunes, walnuts and pasture. Capability unit IIs4 (14).

Pacheco loams, clay substratum (Pf). This soil is intermixed with Mocho, Pacheco and Campbell soils. Texture may be a loam, fine sandy loam or clay loam. Generally, water tables are below 4 feet, but a few areas have seasonal water tables within 2 feet of the surface that will somewhat restrict rooting depth. The substratum is a clay that occurs at a depth of 36 to 40 inches. Average water holding capacity is about 4 to 8 inches. Subsoil permeability is slow. Otherwise, it is similar to Pacheco clay loam. Included in mapping are areas of soils that are calcareous on the surface, about 10 percent; and areas where it is only 20 inches to the clay substratum.

This soil is used for irrigated row crops, prunes and pears. Capability unit IIIw5 (14).

PARRISH SERIES

The Parrish series consists of well drained soils, having gravelly fine textured, strongly acid subsoils, underlain at depths of 2 to 3 feet by hard shales. They formed on strongly sloping to very steep uplands. Vegetation is grasses and forbs, oak trees and a few scattered stands of Ponderosa pine. Elevations range from 1,000 to 3,000 feet. Mean annual rainfall is 20 to 30 inches; mean annual air temperature is about 54 to 56° F. The growing season is about 200 to 250 days. Gaviota and Los Gatos are the principal associated soils.

The surface soil ranges in thickness from 4 to 10 inches and is

Hydric Soils in Santa Clara Area

Map Symbol	Soil Name	Hydric Component	Location Notes
MyE	Montara-Climara complex, 15 to 30 percent slopes		
Og	Orestimba silty clay loam	Orestimba	
Of	Orestimba clay loam	Orestimba	
Pd	Pacheco clay loam	Clear Lake (CA0013)	low alluvial plains
Pa	Pacheco fine sandy loam	Clear Lake (CA0013)	low alluvial plains
Pb	Pacheco silt loam, drained		
Pe	Pacheco clay loam, gravelly substratum	Pacheco (CA0048)	
Pf	Pacheco loams, clay substratum	Pacheco	small areas with high water tables
PgE	Parrish gravelly clay loam, 9 to 30 percent slopes		
PgF	Parrish gravelly clay loam, 30 to 50 percent slopes		
PgG	Parrish gravelly clay loam, 50 to 75 percent slopes		
Pg3	Permanente stony loam, 50 75 percent slopes, severely eroded		

APPENDIX D
DATA FORMS ROUTINE ON-SITE DETERMINATION METHOD
SFWD BDPL PROJECT SITE

DATA FORM: ROUTINE ON-SITE DETERMINATION METHOD*

S1

Field Investigator(s):	Patrick Boursier	Date: October 6, 1992	
Project/Site:	Hetch Hetchy/Guadalupe River	County: Santa Clara	State: CA
Applicant/Owner:	SCVWD	Plant Community: FRESHWATER/ BRACKISH MARSH	

Do normal environmental conditions exist at the plant community? (Yes)/No SITE LOCATED ADJACENT TO RIVER
Explain:

Has the vegetation, soils, and/or hydrology been significantly disturbed? (Yes)/No
Explain: Channel cleared of vegetation on regular basis by SCVWD?

A. VEGETATION

Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum	Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum
*1. Scirpus californicus	OBL	herb	11.		
*2. Typha angustifolia	OBL	↓	12.		
3. Raphanus sativus	UPL	herb	13.		
4. Beta vulgaris	FACU	↓	14.		
5. Arundo donax	FACW	shrub	15.		
6. Polygonum punctatum	OBL	herb	16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC: 100%
Is the hydrophytic vegetation criterion met? (Yes)/No
Rationale: site dominated by hydrophytes

B. SOILS

Series/Phase: Pacheco loams, clay substratum
Subgroup:**
Is the soil on the hydric soils list? (Yes)/No/Undetermined
Is the soil a Histosol? Yes/(No)
Histic epipedon present? Yes/(No)
Is the soil mottled? (Yes)/No
Gleyed? (Yes)/No
Matrix Color:
Mottle Color:
Other hydric soil indicators: no soil pit dug area covered with drift wood

Is the hydric soil criterion met? (Yes)/No
Rationale: on hydric soil list - site directly adj to river. within high tide line

C. HYDROLOGY

Is the ground surface inundated? Yes/No
Surface water depth: –
Is the soil saturated? (Yes)/No
Depth to free-standing water in pit/soil probe hole: –
List other field evidence of surface inundation or soil saturation: drift wood

Is the wetland hydrology criterion met? (Yes)/No
Rationale: within high tide line - drift wood

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? (Yes)/No
Rationale for jurisdictional decision: Criteria met

* This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

** Classification according to "Soil Taxonomy."

H.T. HARVEY AND ASSOCIATES

H.T. HARVEY & ASSOCIATES

Field Investigator(s):	Patrick Boursier	Date: October 6, 1992	
Project/Site:	Hetch Hetchy/Guadalupe River	County: Santa Clara	State: CA
Applicant/Owner:	SCVWD	Plant Community: Freshwater / Brackish Marsh	

Do normal environmental conditions exist at the plant community? Yes/No
Explain:

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes/No
Explain: Channel cleared of vegetation on regular basis by SCVWD?

A. VEGETATION

Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum	Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum
1. Salix lasiolepis	FACW	tree	11.		
2. Raphanus sativus	UPL	herb	12.		
3. Typha angustifolia	OBL	herb	13.		
4.			14.		
5. vegetation sparse			15.		
6. no dominants			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC:
Is the hydrophytic vegetation criterion met? Yes/No
Rationale: site within high tide line, ground mostly draft wood

B. SOILS

Series/Phase: Pacheco loam, clay substratum
Subgroup:**
Is the soil on the hydric soils list? Yes/No/Undetermined
Is the soil a Histosol? Yes/No
Histic epipedon present? Yes/No
Is the soil mottled? Yes/No
Gleyed? Yes/No
Matrix Color:
Mottle Color:
Other hydric soil indicators: no soil pit dug, site covered with draft wood

Is the hydric soil criterion met? Yes/No
Rationale: on hydric soil list

C. HYDROLOGY

Is the ground surface inundated? Yes/No
Surface water depth:
Is the soil saturated? Yes/No
Depth to free-standing water in pit/soil probe hole:
List other field evidence of surface inundation or soil saturation: draft wood

Is the wetland hydrology criterion met? Yes/No
Rationale: within high tide line - draft wood

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes/No
Rationale for jurisdictional decision: Criteria met - site occurs within high tide line

* This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

** Classification according to "Soil Taxonomy."

H.T. HARVEY AND ASSOCIATES

Field Investigator(s):	Patrick Boursier	Date: October 6, 1992	
Project/Site:	Hetch Hetchy/Guadalupe River	County: Santa Clara	State: CA
Applicant/Owner:	SCVWD	Plant Community: Freshwater - Brackish Marsh	

Do normal environmental conditions exist at the plant community? Yes/No
Explain:

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes/No
Explain: channel cleared of vegetation on regular basis by SCVWD?

A. VEGETATION

Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum	Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum
*1. Polygonum punctatum	OBL	herb	11.		
2. Scirpus robustus	OBL		12.		
3. Typha angustifolia	OBL		13.		
4. Scirpus californicus	OBL		14.		
5. Atriplex patula	FACW		15.		
6. Lepidium latifolium	FACW		16.		
7. Arundo donax	FACW	shrub	17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC: 100%
Is the hydrophytic vegetation criterion met? Yes/No
Rationale: site dominated by hydrophytes

B. SOILS

Series/Phase: Pacheco loam, clay substratum
Subgroup:**
Is the soil on the hydric soils list? Yes/No/Undetermined
Is the soil a Histosol? Yes/No
Histic epipedon present? Yes/No
Is the soil mottled? Yes/No
Gleyed? Yes/No DEEP SURFACES GLEYED 10YR 4/1
Matrix Color: 10YR 3/2
Mottle Color: 2.5YR 5/8
Other hydric soil indicators: oxidized root channel - soil column moist
Is the hydric soil criterion met? Yes/No
Rationale: field evidence present - low chroma w/ mottles gleyed - on hydric soil list

C. HYDROLOGY

Is the ground surface inundated? Yes/No
Surface water depth: 0
Is the soil saturated? Yes/No
Depth to free-standing water in pit/soil probe hole: 0
List other field evidence of surface inundation or soil saturation: cracked soil surface - matted vegetation embedded debris wood - silt on surface
Is the wetland hydrology criterion met? Yes/No
Rationale: field evidence present

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes/No
Rationale for jurisdictional decision: Criteria met

* This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

** Classification according to "Soil Taxonomy."

H.T. HARVEY AND ASSOCIATES

Field Investigator(s):	Patrick Boursier	Date: October 6, 1992	
Project/Site:	Hetch Hetchy/Guadalupe River	County: Santa Clara	State: CA
Applicant/Owner:	SCVWD	Plant Community: freshwater - brackish marsh	

Do normal environmental conditions exist at the plant community? Yes/No
Explain:

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes/No
Explain: channel cleared of vegetation on regular basis by SCVWD?

A. VEGETATION

Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum	Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum
*1. Polygonum punctatum	OBL	herb	11.		
*2. Typha angustifolia	OBL		12.		
3. Aster chilensis	FAC		13.		
4. Scirpus robustus	OBL		14.		
5. Atriplex patula	FACW		15.		
6. Foeniculum vulgare	FACU		16.		
7. Raphanus sativus	UPL		17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, ~~FACW~~, and/or FAC: 100 %
Is the hydrophytic vegetation criterion met? Yes/No
Rationale: site dominated by hydrophytes

B. SOILS

Series/Phase: Pacheco loam; clay substratum
Subgroup:**
Is the soil on the hydric soils list? Yes/No/Undetermined
Is the soil a Histosol? Yes/No
Histic epipedon present? Yes/No
Is the soil mottled? Yes/No
Gleyed? Yes/No PED SURFACES GLEYED 10 YR 4/1
Matrix Color: 10 YR 3/2
Mottle Color: 2.5 YR 5/8
Other hydric soil indicators: oxidized root channels

soil column moist

Is the hydric soil criterion met? Yes/No
Rationale: low chroma w/ mottles - gleyed - hydric soil list
oxidized root channels

C. HYDROLOGY

Is the ground surface inundated? Yes/No
Surface water depth: 0
Is the soil saturated? Yes/No
Depth to free-standing water in pit/soil probe hole: 0
List other field evidence of surface inundation or soil saturation: cracked soil surface - matted vegetation
embedded duff wood

Is the wetland hydrology criterion met? Yes/No
Rationale: field evidence present

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes/No
Rationale for jurisdictional decision: Criteria met

* This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

** Classification according to "Soil Taxonomy."

H.T. HARVEY AND ASSOCIATES

DATA FORM: ROUTINE ON-SITE DETERMINATION METHOD

-5

Field Investigator(s):	Patrick Boursier	Date: October 6, 1992	
Project/Site:	Hetch Hetchy/Guadalupe River	County: Santa Clara	State: CA
Applicant/Owner:	SCVWD	Plant Community: freshwater - brackish marsh	

Do normal environmental conditions exist at the plant community? Yes/No
Explain:

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes/No
Explain: Channel cleared of vegetation on regular basis by SCVWD?

A. VEGETATION

Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum	Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum
*1. Atriplex patula	FACW	herb	11. Foeniculum vulgare	FACU	herb
2. Aster chilensis	FAC		12.		
3. Brassica geniculata	UPL		13.		
4. Raphanus sativus	UPL		14.		
5. Picris echioides	FAC		15.		
6. Typha angustifolia	OBL		16.		
7. Rumex crispus	FACW		17.		
*8. Polygonum punctatum	OBL		18.		
9. Sonchus oleraceus	NI		19.		
10. Chrysopsis oregana	FAC		20.		

Percent of dominant species that are OBL, FACW, and/or FAC: 100%
Is the hydrophytic vegetation criterion met? Yes/No
Rationale: Site dominated by hydrophytes

B. SOILS

Series/Phase: Pescadero loams, clay substratum
Subgroup:**
Is the soil on the hydric soils list? Yes/No/Undetermined
Is the soil a Histosol? Yes/No
Histic epipedon present? Yes/No
Is the soil mottled? Yes/No
Gleyed? Yes/No PED SURFACES GLEYED 10YR 4/1
Matrix Color: 10YR 3/2
Mottle Color: 7.5YR 5/8
Other hydric soil indicators: oxidized root channels

Is the hydric soil criterion met? Yes/No
Rationale: hydric soil list - gleying - low chroma - mottles

C. HYDROLOGY

Is the ground surface inundated? Yes/No
Surface water depth: 0
Is the soil saturated? Yes/No
Depth to free-standing water in pit/soil probe hole:
List other field evidence of surface inundation or soil saturation: cracked soil surface of finer sediments
exposed cliff wall
salt on surface — algal mats — matted vegetation
Is the wetland hydrology criterion met? Yes/No
Rationale: Field evidence present

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes/No
Rationale for jurisdictional decision: Criteria met

* This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

** Classification according to "Soil Taxonomy."

H.T. HARVEY AND ASSOCIATES

H.T. HARVEY & ASSOCIATES

DATA FORM: ROUTINE ON-SITE DETERMINATION METHOD

Field Investigator(s):	Patrick Boursier	Date: October 6, 1992	
Project/Site:	Hetch Hetchy/Guadalupe River	County: Santa Clara	State: CA
Applicant/Owner:	SCVWD	Plant Community: freshwater - brackish marsh	

Do normal environmental conditions exist at the plant community? Yes/No
Explain:

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes/No
Explain: Channel cleared of vegetation on regular basis by SCVWD?

A. VEGETATION

Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum	Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum
*1. Cyperus latifolius	FACW	herb	11.		
*2. Foeniculum vulgare	FACU	↓	12.		
*3. Atriplex patula	FACW	↓	13.		
4. Raphanus sativus	UPL	↓	14.		
5. Sonchus oleraceus	NL	↓	15.		
6. Picris echioides	FAC	↓	16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC: 66 %
Is the hydrophytic vegetation criterion met? Yes/No
Rationale: site dominated by hydrophytes

B. SOILS

Series/Phase:
Subgroup:**
Is the soil on the hydric soils list? Yes/No/Undetermined
Is the soil a Histosol? Yes/No
Histic epipedon present? Yes/No
Is the soil mottled? Yes/No
Gleyed? Yes/No
Matrix Color: 10 yr 2/1
Mottle Color: mottling relatively minor than
Other hydric soil indicators: more observed

Is the hydric soil criterion met? Yes/No
Rationale: hydric soil list — low chroma - minor mottling

C. HYDROLOGY

Is the ground surface inundated? Yes/No
Surface water depth: 0
Is the soil saturated? Yes/No
Depth to free-standing water in pit/soil probe hole: 0
List other field evidence of surface inundation or soil saturation: cracked soil surface of fine sediments
some embedded drift wood

Is the wetland hydrology criterion met? Yes/No
Rationale: field evidence present

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes/No
Rationale for jurisdictional decision: Criteria met

* This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

** Classification according to "Soil Taxonomy."

H.T. HARVEY AND ASSOCIATES

DATA FORM: ROUTINE ON-SITE DETERMINATION METHOD

Site located on bank

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Field Investigator(s):	Patrick Boursier	Date: October 6, 1992	
Project/Site:	Hetch Hetchy/Guadalupe River	County: Santa Clara	State: CA
Applicant/Owner:	SCVWD	Plant Community: coyote brush riparian scrub/ruderal	

Do normal environmental conditions exist at the plant community? Yes/No

Explain:

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes/No

Explain: channel cleared of vegetation on regular basis by SCVWD?

A. VEGETATION

Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum	Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum
*1. Baccharis pilularis	UPL	Shrub	11.		
*2. Foeniculum vulgare	FACU	Herb	12.		
*3. Raphanus sativus	UPL	↓	13.		
4. Lepidium latifolium	FACW	↓	14.		
5. Elymus triticoides	FACW	↓	15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC: 0 %

Is the hydrophytic vegetation criterion met? Yes/No

Rationale: site dominated by upland species

B. SOILS

Series/Phase: Pachece loams, clay substratum

Subgroup:**

Is the soil on the hydric soils list? Yes/No/Undetermined

Is the soil a Histosol? Yes/No

Histic epipedon present? Yes/No

Is the soil mottled? Yes/No

Gleyed? Yes/No

Matrix Color: 10 YR 2/1

Mottle Color: faint - minor

Other hydric soil indicators: none observed

Is the hydric soil criterion met? Yes/No

Rationale: on hydric soil list - low chroma

C. HYDROLOGY

Is the ground surface inundated? Yes/No

Surface water depth: 0

Is the soil saturated? Yes/No

Depth to free-standing water in pit/soil probe hole: 0

List other field evidence of surface inundation or soil saturation: none observed

Is the wetland hydrology criterion met? Yes/No

Rationale: No field evidence

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes/No

Rationale for jurisdictional decision: Vegetation and hydrology criteria not met

* This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

** Classification according to "Soil Taxonomy."

H.T. HARVEY AND ASSOCIATES

H.T. HARVEY & ASSOCIATES

DATA FORM: ROUTINE ON-SITE DETERMINATION METHOD

site located on bank

Field Investigator(s): Patrick Boursier	Date: October 6, 1992
Project/Site: Hetch Hetchy/Guadalupe River	County: Santa Clara State: CA
Applicant/Owner: SCVWD	Plant Community: Baccharis brush riparian scrub / ruderal

Do normal environmental conditions exist at the plant community? Yes/No
Explain:

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes/No
Explain: channel cleared of vegetation on regular basis by SCVWD?

A. VEGETATION

Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum	Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum
1. Artemisia douglasiana	FACW	herb	11.		
*2. Baccharis pilularis	UPL	shrub	12.		
*3. Lepidium latifolium	FACW	herb	13.		
*4. Foeniculum vulgare	FACU	↓	14.		
*5. Bromus diandrus	UPL		15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC: 25%
Is the hydrophytic vegetation criterion met? Yes/No
Rationale: Site dominated by upland species

B. SOILS

Series/Phase: Pacheco loam, clay substratum
Subgroup:**
Is the soil on the hydric soils list? Yes/No/Undetermined
Is the soil a Histosol? Yes/No
Histic epipedon present? Yes/No
Is the soil mottled? Yes/No
Gleyed? Yes/No
Matrix Color: 10 YR 2/1
Mottle Color: faint - minor
Other hydric soil indicators: none observed

Is the hydric soil criterion met? Yes/No
Rationale: on hydric soil list - low chroma

C. HYDROLOGY

Is the ground surface inundated? Yes/No
Surface water depth: 0
Is the soil saturated? Yes/No
Depth to free-standing water in pit/soil probe hole: 0
List other field evidence of surface inundation or soil saturation: none observed

Is the wetland hydrology criterion met? Yes/No
Rationale: No field evidence

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes/No
Rationale for jurisdictional decision: Vegetation and hydrology criteria not met

* This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

** Classification according to "Soil Taxonomy."

H.T. HARVEY AND ASSOCIATES

Field Investigator(s):	Patrick Boursier	Date: October 6, 1992	
Project/Site:	Hetch Hetchy/Guadalupe River	County: Santa Clara	State: CA
Applicant/Owner:	SCVWD	Plant Community: freshwater - brackish marsh	

Do normal environmental conditions exist at the plant community? (Yes)/No
Explain:

Has the vegetation, soils, and/or hydrology been significantly disturbed? (Yes)/No
Explain: Channel cleared of vegetation on regular basis by SCVWD?

A. VEGETATION

Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum	Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum
*1. Lepidium latifolium	FACW	herb	11.		
*2. Atriplex patula	FACW		12.		
3. Foeniculum vulgare	FACU		13.		
4. Scirpus robustus	OBL		14.		
5. Scirpus californicus	OBL		15.		
6. Conium maculatum	FACW		16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC: 100 %
Is the hydrophytic vegetation criterion met? (Yes)/No
Rationale: site dominated by hydrophytes

B. SOILS

Series/Phase: Packera loams, clay substratum
Subgroup:**
Is the soil on the hydric soils list? (Yes)/No/Undetermined
Is the soil a Histosol? Yes/(No)
Histic epipedon present? Yes/(No)
Is the soil mottled? (Yes)/No
Gleyed? (Yes)/No 10YR 4/1
Matrix Color: 10YR 3/2
Mottle Color: 7.5YR 5/8
Other hydric soil indicators: oxidized root channel

Is the hydric soil criterion met? (Yes)/No
Rationale: hydric soil list - mottles - gleying - low chroma

C. HYDROLOGY

Is the ground surface inundated? Yes/(No)
Surface water depth: 0
Is the soil saturated? Yes/(No)
Depth to free-standing water in pit/soil probe hole: 0
List other field evidence of surface inundation or soil saturation: cracked soil surface - matted vegetation
embedded dead wood
algal mats
Is the wetland hydrology criterion met? (Yes)/No
Rationale: field evidence present

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? (Yes)/No
Rationale for jurisdictional decision: Criteria met

* This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

** Classification according to "Soil Taxonomy."

H.T. HARVEY AND ASSOCIATES

DATA FORM: ROUTINE ON-SITE DETERMINATION METHOD

-16

Field Investigator(s):	Patrick Boursier	Date: October 6, 1992	
Project/Site:	Hetch Hetchy/Guadalupe River	County: Santa Clara	State: CA
Applicant/Owner:	SCVWD	Plant Community: freshwater-brackish marsh	

Do normal environmental conditions exist at the plant community? Yes/No
Explain:

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes/No
Explain: Channel cleared of vegetation on regular basis by SCVWD?

A. VEGETATION

Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum	Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum
1. Rumex crispus	FACW	herb	11.		
*2. Atriplex patula	FACW	↓	12.		
*3. Lepidium latifolium	FACW	↓	13.		
*4. Chrysopsis oregana	FAC?	↓	14.		
5. Arundo donax	FACW	↓	15.		
6. Salix laevigata	FACW	tree	16.		
7. Ailanthus altissima	FACU	herb	17.		
8. Solanum nigrum	FACU	↓	18.		
9. Picris echioides	FAC	↓	19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC: 100 %
Is the hydrophytic vegetation criterion met? Yes/No
Rationale: Site dominated by hydrophytes

B. SOILS

Series/Phase: Pachecco loam, clay substratum
Subgroup:**
Is the soil on the hydric soils list? Yes/No/Undetermined
Is the soil a Histosol? Yes/No
Histic epipedon present? Yes/No
Is the soil mottled? Yes/No
Gleyed? Yes/No PED SURFACES GLEYED 10YR 4/1
Matrix Color: 10YR 3/2
Mottle Color: 7.5YR 5/8
Other hydric soil indicators: oxidized root channels

Is the hydric soil criterion met? Yes/No
Rationale: on hydric soil list - low chroma - mottles - gleyed

C. HYDROLOGY

Is the ground surface inundated? Yes/No
Surface water depth: 0
Is the soil saturated? Yes/No
Depth to free-standing water in pit/soil probe hole: 0
List other field evidence of surface inundation or soil saturation:
cracked soil surface - mottled vegetation

Is the wetland hydrology criterion met? Yes/No
Rationale: field evidence present

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes/No
Rationale for jurisdictional decision: Criteria met

* This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

** Classification according to "Soil Taxonomy."

H.T. HARVEY AND ASSOCIATES

H.T. HARVEY & ASSOCIATES

Site on edge of river

Field Investigator(s):	Patrick Boursier	Date: October 6, 1992	
Project/Site:	Hetch Hetchy/Guadalupe River	County: Santa Clara	State: CA
Applicant/Owner:	SCVWD	Plant Community: freshwater - brackish marsh	

Do normal environmental conditions exist at the plant community? Yes/No
Explain:

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes/No
Explain: Channel cleared of vegetation on regular basis by SCVWD?

A. VEGETATION

Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum	Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum
*1. Typha angustifolia	OBL	herb	11.		
*2. Scirpus californicus	OBL	↓	12.		
3. Cyperus eutolenus	FACW		13.		
4. Polygonum sativum	UPL		14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC: 100%
Is the hydrophytic vegetation criterion met? Yes/No
Rationale: site dominated by hydrophytes

B. SOILS

Series/Phase: Pacheco loam, clay substratum
Subgroup:**
Is the soil on the hydric soils list? Yes/No/Undetermined
Is the soil a Histosol? Yes/No
Histic epipedon present? Yes/No
Is the soil mottled? Yes/No
Gleyed? Yes/No
Matrix Color:
Mottle Color:
Other hydric soil indicators: no soil pit dug on edge of river

Is the hydric soil criterion met? Yes/No
Rationale: hydric soil list - within high tide line

C. HYDROLOGY

Is the ground surface inundated? Yes/No
Surface water depth: 0
Is the soil saturated? Yes/No
Depth to free-standing water in pit/soil probe hole: 0
List other field evidence of surface inundation or soil saturation: mottled vegetation - drift wood site occurs with high tide line

Is the wetland hydrology criterion met? Yes/No
Rationale: field evidence present

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes/No
Rationale for jurisdictional decision: Criteria met

* This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

** Classification according to "Soil Taxonomy."

H.T. HARVEY AND ASSOCIATES

DATA FORM: ROUTINE ON-SITE DETERMINATION METHOD*

Sir

Field Investigator(s):	Patrick Boursier	Date: October 6, 1992	
Project/Site:	Hetch Hetchy/Guadalupe River	County: Santa Clara	State: CA
Applicant/Owner:	SCVWD	Plant Community: freshwater - brackish marsh	

Do normal environmental conditions exist at the plant community? (Yes)/No
Explain:

Has the vegetation, soils, and/or hydrology been significantly disturbed? (Yes)/No
Explain: channel cleared of vegetation on regular basis by SCVWD?

A. VEGETATION

Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum	Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum
*1. Lepidium latifolium	FACW	herb	11.		
*2. Scirpus californicus	OBL	↓	12.		
3. Typha angustifolia	OBL	↓	13.		
4. Scirpus robustus	OBL	↓	14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC: 100%
Is the hydrophytic vegetation criterion met? (Yes)/No
Rationale: site dominated by hydrophytes

B. SOILS

Series/Phase: Pacheco loam, clay substratum
Subgroup:**
Is the soil on the hydric soils list? (Yes)/No/Undetermined
Is the soil a Histosol? Yes/(No)
Histic epipedon present? Yes/(No)
Is the soil mottled? (Yes)/No
Gleyed? (Yes)/No
Matrix Color: 10 YR 4/2
Mottle Color: 2.5 YR 4/8
Other hydric soil indicators: oxidized root channels
alluvial clay and sands
Is the hydric soil criterion met? (Yes)/No
Rationale: on hydric list - low chroma - mottles - gleying

C. HYDROLOGY

Is the ground surface inundated? Yes/(No)
Surface water depth: 0
Is the soil saturated? Yes/(No)
Depth to free-standing water in pit/soil probe hole: 0
List other field evidence of surface inundation or soil saturation: algal mats - matted vegetation
cracked soil surface
drift wood
Is the wetland hydrology criterion met? (Yes)/No
Rationale: field evidence present

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? (Yes)/No
Rationale for jurisdictional decision: Criteria met

* This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

** Classification according to "Soil Taxonomy."

H.T. HARVEY AND ASSOCIATES

H.T. HARVEY & ASSOCIATES

DATA FORM: ROUTINE ON-SITE DETERMINATION METHOD*

D13

Field Investigator(s):	Patrick Boursier	Date: October 6, 1992	
Project/Site:	Hetch Hetchy/Guadalupe River	County: Santa Clara	State: CA
Applicant/Owner:	SCVWD	Plant Community: fresh water-brackish marsh	

Do normal environmental conditions exist at the plant community? Yes/No
Explain:

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes/No
Explain: channel cleared of vegetation on regular basis by SCVWD?

A. VEGETATION

Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum	Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum
*1. Lepidium latifolium	FACW	herb	11.		
*2. Scirpus robustus	OBL	↓	12.		
*3. Scirpus californicus	OBL	↓	13.		
4. Jaumea carnosa	OBL	↓	14.		
5. Baccharis pilularis	UPL	shrub	15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC: 100 %
Is the hydrophytic vegetation criterion met? Yes/No
Rationale: site dominated by hydrophytes

B. SOILS

Series/Phase: Pacheco loam, clay substratum
Subgroup:**
Is the soil on the hydric soils list? Yes/No/Undetermined
Is the soil a Histosol? Yes/No
Histic epipedon present? Yes/No
Is the soil mottled? Yes/No
Gleyed? Yes/No
Matrix Color: 10 YR 4/2
Mottle Color: 2.5 YR 4/8
Other hydric soil indicators: oxidized root channels

Is the hydric soil criterion met? Yes/No
Rationale: on hydric soil list - low chroma - mottles - gleying

C. HYDROLOGY

Is the ground surface inundated? Yes/No
Surface water depth: 0
Is the soil saturated? Yes/No
Depth to free-standing water in pit/soil probe hole: 0
List other field evidence of surface inundation or soil saturation: algal mats - mottled vegetation, cracked soil surface -

Is the wetland hydrology criterion met? Yes/No
Rationale: field evidence present

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes/No
Rationale for jurisdictional decision: Criteria met

* This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

** Classification according to "Soil Taxonomy."

H.T. HARVEY AND ASSOCIATES

H.T. HARVEY & ASSOCIATES

DATA FORM: ROUTINE ON-SITE DETERMINATION METHOD*

S14

Field Investigator(s):	Patrick Boursier	Date: October 6, 1992	
Project/Site:	Hetch Hetchy/Guadalupe River	County: Santa Clara	State: CA
Applicant/Owner:	SCVWD	Plant Community: coyote brush riparian scrub / ruderal	

Do normal environmental conditions exist at the plant community? Yes/No
Explain:

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes/No
Explain: Channel cleared of vegetation on regular basis by SCVWD (?)

A. VEGETATION

Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum	Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum
*1. Baccharis pilularis	UPL	Shrub	11.		
*2. Cirsium lobifolium	FACW	herb	12.		
3. Malva parviflora	UPL	↓	13.		
4. Artemisia douglasiana	FACW	↓	14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC: 50%
Is the hydrophytic vegetation criterion met? Yes/No
Rationale: site 50% hydrophytes
approximate line of coyote brush growth on bank

B. SOILS

Series/Phase: Pachecco ~~clay~~ loams, clay substratum
Subgroup:**
Is the soil on the hydric soils list? Yes/No/Undetermined
Is the soil a Histosol? Yes/No
Histic epipedon present? Yes/No
Is the soil mottled? Yes/No
Gleyed? Yes/No
Matrix Color: 7.5 yr 3/3
Mottle Color:
Other hydric soil indicators: none observed

sandy soil
Is the hydric soil criterion met? Yes/No
Rationale: on hydric soil list

C. HYDROLOGY

Is the ground surface inundated? Yes/No
Surface water depth: 0
Is the soil saturated? Yes/No
Depth to free-standing water in pit/soil probe hole: 0
List other field evidence of surface inundation or soil saturation: none observed
site located on bank

Is the wetland hydrology criterion met? Yes/No
Rationale: No field evidence

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes/No
Rationale for jurisdictional decision: Hydrology criteria not met
vegetation evidence is weak

* This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

** Classification according to "Soil Taxonomy."

H.T. HARVEY AND ASSOCIATES

DATA FORM: ROUTINE ON-SITE DETERMINATION METHOD

>15

Field Investigator(s):	Patrick Boursier	Date: October 6, 1992	
Project/Site:	Hetch Hetchy/Guadalupe River	County: Santa Clara	State: CA
Applicant/Owner:	SCVWD	Plant Community: carpet brush riparian scrub / willow	

Do normal environmental conditions exist at the plant community? Yes/No
Explain:

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes/No
Explain: Channel cleared of vegetation on regular basis by SCVWD?

A. VEGETATION

Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum	Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum
*1. Cynodon dactylon	FACW	herb	11.		
*2. Baccharis pilularis	UPL	shrub	12.		
3. Bromus diandrus	UPL	herb	13.		
4. Heterotropion crossicarum	OBL		14.		
5. Cirsium canadensis	FAC		15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC: 50 %
Is the hydrophytic vegetation criterion met? Yes/No
Rationale: site 50% hydrophytes

B. SOILS

Series/Phase: Pacheco loam, clay substratum
Subgroup:**
Is the soil on the hydric soils list? Yes/No/Undetermined
Is the soil a Histosol? Yes/No
Histic epipedon present? Yes/No
Is the soil mottled? Yes/No
Gleyed? Yes/No
Matrix Color: 2.5 YR 3/3
Mottle Color: —
Other hydric soil indicators: none observed

Is the hydric soil criterion met? Yes/No
Rationale: on hydric soil list

C. HYDROLOGY

Is the ground surface inundated? Yes/No
Surface water depth: 0
Is the soil saturated? Yes/No
Depth to free-standing water in pit/soil probe hole: 0
List other field evidence of surface inundation or soil saturation: none observed
site located on bank

Is the wetland hydrology criterion met? Yes/No
Rationale: No field evidence

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes/No
Rationale for jurisdictional decision: Criteria for hydrology not met
vegetation evidence is weak

* This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

** Classification according to "Soil Taxonomy."

H.T. HARVEY AND ASSOCIATES

DATA FORM: ROUTINE ON-SITE DETERMINATION METHOD

Field Investigator(s):	Patrick Boursier	Date: October 6, 1992	
Project/Site:	Hetch Hetchy/Guadalupe River	County: Santa Clara	State: CA
Applicant/Owner:	SCVWD	Plant Community: freshwater-brackish marsh	

Do normal environmental conditions exist at the plant community? (Yes)/No
Explain:

Has the vegetation, soils, and/or hydrology been significantly disturbed? (Yes)/No
Explain: channel cleared & vegetation on regular basis by SCVWD(?)

A. VEGETATION

Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum	Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum
*1. Scirpus californicus	OBL	herb	11.		
*2. Typha angustifolia	OBL	↓	12.		
3.			13.		
4.			14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC: 100 %
Is the hydrophytic vegetation criterion met? (Yes)/No
Rationale: site dominated by hydrophytes

B. SOILS

Series/Phase: Pachecca loams, clay substratum
Subgroup:**
Is the soil on the hydric soils list? (Yes)/No/Undetermined
Is the soil a Histosol? Yes/(No)
Histic epipedon present? Yes/(No)
Is the soil mottled? Yes/No
Gleyed? Yes/No
Matrix Color:
Mottle Color:
Other hydric soil indicators: no soil pit dug

Is the hydric soil criterion met? (Yes)/No
Rationale: hydric soil list - site located adjacent to river

C. HYDROLOGY

Is the ground surface inundated? Yes/(No)
Surface water depth: 0
Is the soil saturated? Yes/No
Depth to free-standing water in pit/soil probe hole:
List other field evidence of surface inundation or soil saturation: dead wood, matted vegetation - site occurs within high tide line
Is the wetland hydrology criterion met? (Yes)/No
Rationale: Field evidence present

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? (Yes)/No
Rationale for jurisdictional decision: Criteria met

* This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

** Classification according to "Soil Taxonomy."

H.T. HARVEY AND ASSOCIATES

Field Investigator(s):	Patrick Boursier	Date: October 6, 1992	
Project/Site:	Hetch Hetchy/Guadalupe River	County: Santa Clara	State: CA
Applicant/Owner:	SCVWD	Plant Community: freshwater - brackish marsh	

Do normal environmental conditions exist at the plant community? (Yes)/No
Explain:

Has the vegetation, soils, and/or hydrology been significantly disturbed? (Yes)/No
Explain: channel cleared of vegetation on regular basis by SCVWD (?)

A. VEGETATION

Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum	Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum
*1. Lepidium latifolium	FACW	herb	11.		
*2. Chrysopsis oregana	FAC ?	↓	12.		
*3. Scirpus robustus	OBL		13.		
4.			14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC: 100 %
Is the hydrophytic vegetation criterion met? (Yes)/No
Rationale: site dominated by hydrophytes

B. SOILS

Series/Phase: Pescadero loam, clay substratum
Subgroup:**
Is the soil on the hydric soils list? (Yes)/No/Undetermined
Is the soil a Histosol? Yes/(No)
Histic epipedon present? Yes/(No)
Is the soil mottled? (Yes)/No
Gleyed? (Yes)/No
Matrix Color: 10 YR 4/2
Mottle Color: 7.5 YR 5/8
Other hydric soil indicators: oxidized root channels

Is the hydric soil criterion met? (Yes)/No
Rationale: on hydric soil list - low chroma - mottles - gleying

C. HYDROLOGY

Is the ground surface inundated? Yes/(No)
Surface water depth: 0
Is the soil saturated? Yes/(No)
Depth to free-standing water in pit/soil probe hole: 0
List other field evidence of surface inundation or soil saturation: algal mats - matted vegetation
cracked soil surface - drift/wrack

Is the wetland hydrology criterion met? (Yes)/No
Rationale: Field evidence present

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? (Yes)/No
Rationale for jurisdictional decision: Criteria met

* This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

** Classification according to "Soil Taxonomy."

H.T. HARVEY AND ASSOCIATES

Field Investigator(s):	Patrick Boursier	Date: October 6, 1992	
Project/Site:	Hetch Hetchy/Guadalupe River	County: Santa Clara	State: CA
Applicant/Owner:	SCVWD	Plant Community: fresh water - brackish marsh	

Do normal environmental conditions exist at the plant community? Yes/No
Explain:

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes/No
Explain: Channel cleared of vegetation on regular basis by SCVWD?

A. VEGETATION

Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum	Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum
*1. Lepidium latifolium	FACW	herb	11.		
*2. Chrysopsis oregona	FAC?	↓	12.		
3. Scirpus robustus	OBL		13.		
4.			14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC: 100 %
Is the hydrophytic vegetation criterion met? Yes/No
Rationale: Site dominated by hydrophytes

B. SOILS

Series/Phase: Pescadero loams, clay substratum
Subgroup:**
Is the soil on the hydric soils list? Yes/No/Undetermined
Is the soil a Histosol? Yes/No
Histic epipedon present? Yes/No
Is the soil mottled? Yes/No
Gleyed? Yes/No
Matrix Color: 10 YR 4/2
Mottle Color: 7.5 YR 5/8
Other hydric soil indicators: oxidized root channels

Is the hydric soil criterion met? Yes/No
Rationale: on hydric soil list - mottles - low chroma - gleyed

C. HYDROLOGY

Is the ground surface inundated? Yes/No
Surface water depth: 0
Is the soil saturated? Yes/No
Depth to free-standing water in pit/soil probe hole: 0
List other field evidence of surface inundation or soil saturation: matted vegetation
algal mat - cracked soil surface

Is the wetland hydrology criterion met? Yes/No
Rationale: Field evidence present

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes/No
Rationale for jurisdictional decision: Criteria met

* This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

** Classification according to "Soil Taxonomy."

H.T. HARVEY AND ASSOCIATES

DATA FORM: ROUTINE ON-SITE DETERMINATION METHOD

SP

Field Investigator(s):	Patrick Boursier	Date: October 6, 1992	
Project/Site:	Hetch Hetchy/Guadalupe River	County: Santa Clara	State: CA
Applicant/Owner:	SCVWD	Plant Community: coyote brush riparian scrub	

Do normal environmental conditions exist at the plant community? (Yes)/No
Explain:

Has the vegetation, soils, and/or hydrology been significantly disturbed? (Yes)/No
Explain: Channel cleared of vegetation on regular basis by SCVWD?

A. VEGETATION

Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum	Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum
X 1. Lonicera latifolium	FACW	herb	11.		
X 2. Baccharis pilularis	UPL	shrub	12.		
3.			13.		
4.			14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC: 50 %
Is the hydrophytic vegetation criterion met? (Yes)/No
Rationale: site 50% hydrophytes
approximate line of coyote brush growth on bank

B. SOILS

Series/Phase: Pachec loams, clay substratum
Subgroup:**
Is the soil on the hydric soils list? (Yes)/No/Undetermined
Is the soil a Histosol? Yes/(No)
Histic epipedon present? Yes/(No)
Is the soil mottled? Yes/(No)
Gleyed? Yes/(No)
Matrix Color: 2.5YR 3/3
Mottle Color: —
Other hydric soil indicators: none observed

Is the hydric soil criterion met? (Yes)/No
Rationale: on hydric soil list

C. HYDROLOGY

Is the ground surface inundated? Yes/(No)
Surface water depth: 0
Is the soil saturated? Yes/(No)
Depth to free-standing water in pit/soil probe hole: 0
List other field evidence of surface inundation or soil saturation: none observed
site located on bank

Is the wetland hydrology criterion met? Yes/(No)
Rationale: No field evidence

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes/(No)
Rationale for jurisdictional decision: Hydrology criteria not met
vegetation evidence is weak

* This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

** Classification according to "Soil Taxonomy."

H.T. HARVEY AND ASSOCIATES

DATA FORM: ROUTINE ON-SITE DETERMINATION METHOD*

J20

Field Investigator(s):	Patrick Boursier	Date: October 6, 1992	
Project/Site:	Hetch Hetchy/Guadalupe River	County: Santa Clara	State: CA
Applicant/Owner:	SCVWD	Plant Community: coyote brush ~~[illegible]~~ riparian scrub	

Do normal environmental conditions exist at the plant community? Yes/No
Explain:

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes/No
Explain: channel cleared of vegetation on regular basis by SCVWD ?

A. VEGETATION

Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum	Plant Species dominant plants denoted with asterisk	Indicator Status	Stratum
*1. Lepidium latifolium	FACW	herb	11.		
*2. Baccharis pilularis	UPL	shrub	12.		
3. Bromus diandrus			13.		
4.			14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC: 50 %
Is the hydrophytic vegetation criterion met? Yes/No
Rationale: site 50% hydrophytes

B. SOILS

Series/Phase: Pacheco loams, clay substratum
Subgroup:**
Is the soil on the hydric soils list? Yes/No/Undetermined
Is the soil a Histosol? Yes/No
Histic epipedon present? Yes/No
Is the soil mottled? Yes/No
Gleyed? Yes/No
Matrix Color: 7.5 yr 3/3
Mottle Color:
Other hydric soil indicators: none observed

Is the hydric soil criterion met? Yes/No
Rationale: on hydric soil list

C. HYDROLOGY

Is the ground surface inundated? Yes/No
Surface water depth: 0
Is the soil saturated? Yes/No
Depth to free-standing water in pit/soil probe hole: 0
List other field evidence of surface inundation or soil saturation: some matted vegetation
moss clumps beneath shrubs
site on bank
Is the wetland hydrology criterion met? Yes/No
Rationale: No field evidence

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes/No
Rationale for jurisdictional decision: Hydrology criteria not met
vegetation evidence is weak

* This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

** Classification according to "Soil Taxonomy."

H.T. HARVEY AND ASSOCIATES

H.T. HARVEY & ASSOCIATES

APPENDIX E
HISTORICAL AND ARCHEOLOGICAL SURVEY
SFWD BDPL PROJECT SITE

CULTURAL RESOURCE EVALUATION
FOR HETCH HETCHY PIPELINE PROJECT
COUNTY OF SANTA CLARA

FOR

H. T. HARVEY AND ASSOCIATES
906 ELIZABETH STREET
P.O.BOX 1180
ALVISO, CA 95002
#60800-92-419

BY

ARCHAEOLOGICAL RESOURCE MANAGEMENT
496 N. FIFTH STREET
SAN JOSE, CA 95112 (408)295-1373
ROBERT CARTIER, PRINCIPAL

NOVEMBER 11, 1992

ADMONITION

Certain information contained in this report is not intended for general public distribution. Portions of this report locate significant archaeological sites in the region of the project area, and indiscriminate distribution of these data could result in the desecration and destruction of invaluable cultural resources. In order to ensure the security of the critical data in this report, certain maps and passages may be deleted in copies not delivered directly into the hands of environmental personnel and qualified archaeologists.

THE PRINCIPAL INVESTIGATOR

ABSTRACT

Archaeological research was carried out for the relocation of two Hetch Hetchy pipelines at their crossing of the Guadalupe River in the Cities of San Jose and Santa Clara, County of Santa Clara. The research included an archival search in the State records and a surface survey of the property. The archival research revealed that there are no recorded archaeological sites located on the project area, however, a number of sites are in the vicinity. Most notably, CA-SCl-6w, is located next to the project area on the southwest side of the river and includes a burial complex. Cartier (1990) defined the limits of CA-SCl-6 as being west, northwest of the Hetch Hetchy project area. Also, observations during the construction of the City of Santa Clara pump station located next to the Hetch Hetchy on the west bank of the river by Cartier (1989), found no archaeological materials. No indications of cultural resources were noted during the surface reconnaissance. In light of the intensive prehistoric use of the general area by aboriginal populations, it is recommended that the project be monitored by a qualified archaeologist.

REQUEST FOR ARCHAEOLOGICAL EVALUATION

The archaeological evaluation was carried out to determine the presence or absence of any significant cultural resources. Archaeological services were requested in October 1990 in order to provide an evaluation that would investigate the possible presence of cultural resources. This study meets the requirements of CEQA (California Environmental Quality Act) and federal requirements.

QUALIFICATIONS OF ARCHAEOLOGICAL RESOURCE MANAGEMENT

Archaeological Resource Management has been specifically engaged in cultural resource evaluations in central California since 1977. The firm is owned and operated by Dr. Robert Cartier, the Principal Investigator. Ms. Laffey, registered professional historian, serves as the firm's Historian. Dr. Cartier has a Ph.D. in Anthropology, and is certified by the Society of Professional Archaeologists (SOPA) for conducting cultural resource investigations as well as other specialized work in archaeology.

LOCATION AND DESCRIPTION OF THE SUBJECT AREA

The Hetch Hetchy pipeline crossing on the Guadalupe River is located west of North First Street and south of the intersection of Tasman Drive and Rio Robles Drive in the Cities of San Jose and Santa Clara, County of Santa Clara. On the USGS 7.5 minute quadrangle of San Jose West, the Universal Transverse Mercator Grid (UTMG) centerpoint of the project area is 592920/4140100. The elevation is approximately 10 feet MSL. The nearest source of fresh water is the Guadalupe River at the project area.

The proposed project consists of the relocation of two Hetch Hetchy pipelines (San Francisco Water Department's Bay Division Pipelines Nos. 3 and 4) at their crossing of the Guadalupe River. The existing above ground crossings will be replaced with underground lines in approximately the same location. The project will include the placement of an 120 ft. length of pipe. Construction will require grading, excavation of trenches, and temporary disturbance of the river channel.

METHODOLOGY

The methodology used in this investigation consists of an archival search, a surface reconnaissance, and a written report of the findings with appropriate recommendations. The archival research is conducted by transferring the study location to a state archaeologi-

cal office which maintains all records of archaeological investigations. This is done in order to learn if any archaeological sites or surveys have been recorded within a mile of the subject area. Each archival search with the state is given a file number for verification. The surface reconnaissance portion of the evaluation is done to determine if traces of historic or prehistoric materials exist within the study area. This survey is conducted by a field archaeologist who examines exposed soils for cultural material. The investigator is looking for early ceramics, Native American cooking debris, and artifacts of stone, bone, and shell. A report is written containing the archival information, record search number, the survey findings, and appropriate recommendations. A copy of this evaluation is sent to the state archaeological office by requirements of state procedure.

ARCHIVAL BACKGROUND AND SURFACE RECONNAISSANCE

Archival: Prior to reconnoitering the subject area, a study of the maps and records at the Northwest Information Center of the California Archaeological Site Inventory was conducted and given the file number of 60800-92-419. This research into the records at the Information Center was done to determine if any known archaeological resources were reported in or around the subject area. There are a number of recorded archaeological sites and surveys in the vicinity of the project area (see map of area sites). Over the past sixteen years a number of surface surveys, excavations, and monitoring programs during construction were conducted on the eastern side of the Guadalupe River. In late 1980 an archaeological deposit was noted and reported on the east side of the Guadalupe River where Tasman Drive now crosses over (Cartier 1981). Two archaeological studies were done in the region of the subject area, one a surface examination and the second a subsurface testing program (Basin Research Associates 1981). The first of these studies found minor traces of prehistoric material in the northeast corner of the intersection where Tasman Drive now crosses the Guadalupe River. Cultural material recorded included clam, faunal material and *Cerithidea* (local shell type). The area was disturbed especially west and east of a farm. The second study, S662, included the excavation of 28 trenches which were all found to be sterile of cultural material except at the surface of a few trenches near the Tasman Drive crossing. Some culltural material was recorded on the surface. The location of CA-SCl-447/6E was not clearly defined from surface collection of cultural material . Agricultural use, farm road and earth levee construction along the Guadalupe River, as well as the river channelization efforts have all contributed to considerable site disturbance. Not until subsurface excavations began in 1981 was the site area more clearly defined.

Cartier et al in 1981 conducted hand-excavation and trenching to define site CA-SCl-447. Artifactual material recovered in the Cartier study included lithic debitage, fauna, shell, plant remains, baked clay, fire cracked rock, and charcoal (Cartier; 1981).

Another site boundary investigation in 1981 undertook an additional backhoe testing program that strategically placed thirty trenches for the construction of Tasman Drive. Found in this excavation were shell, baked clay, fire cracked rock, and charcoal flecks, a cache of two pestles and a previously disturbed human burial (adult female). The pestles, which are usually indicative of acorn and seed processing, were attributed to the Late Phase of the Middle Horizon through the end of the Late Horizon (ca. A.D. 700 to A.D. 1600; Bard, Busby, Fee and Tannam; 1981; Koori and Kennard 1981).

A data recovery program undertaken in 1982/1983, just north of Tasman Drive, consisted of hand-excavation and monitoring during construction. These excavation phases identified the area near the centerline of Tasman Drive, as being a very rich deposit. The artifactual material recovered included lithic debitage (chert and obsidian), baked clay, vitrified clay, fire cracked rock, 4 projectile points, 2 notched scrapers, 4 cores, 14 edge

damaged/utilized flakes, a battered core/hammerstone, a worked pointed bone, a bone awl tip, and *Olivella* shell beads. During the monitoring phase, a charmstone, and portable mortar were recovered. Isolated human bone was found during excavation and on the site surface. Two burials were discovered in the mound beneath one of the farm structures and are currently *in situ* within the Tasman Drive right of way. (Bard, Busby, Kobori, and Findly 1984)

A more intensive investigation of site CA-SCl-447 was conducted by Cartier (1983) to better define the cultural aspects of this deposit. Hand-excavation and backhoe trenching were placed throughout a 725 by 575 foot test area. No human bones were found. Artifacts included chert debitage, fauna, shell, baked clay, vitrified clay, and fire cracked rock . The absence of diagnostic artifacts prevented any dating of the occupation period represented by the deposit. The general configuration of CA-SCl-447/6E as defined by Bard (1981), Busby with Fee and Tannam (1981) and the 1982 testing phase was generally confirmed by Cartier in 1983.

During the winter of 1983/1984, archaeological monitoring of construction found human bone fragments in the earth levee along the Guadalupe River from Montague Expressway on the south to Highway 237, the Alviso-Milpitas Road to the north (Bard et al 1984). A number of prehistoric artifacts were recovered during the construction monitoring for a large storm trench (San Jose, Department of Public Works, 1982).

Archaeological investigations were initiated by Basin Research Associates in 1985 to determine any adverse effect by the Guadalupe Transportation Corridor construction. As reviewed above, local archaeologists suggest that the cultural deposits of CA-SCl-447/6E are found on both sides of the Guadalupe River reflecting a single site separated by the changing channel of the river (Bard et al 1985; p. 1). Testing by Basin Research and Associates consisted of a systematic backhoe testing program , surface reconnaissance, and subsurface excavation. In 1984 the site was determined to be eligible for listing on the National Register of Historic Places.

In summary, aboriginal human skeletal material and intact Native American burials were found in both subsurface and surface locations of SCl-6 and SCl-447. Other recovered cultural materials included projectile points, scrapers, cores, utilized flakes, lithic debitage, pestles, battered cores/hammerstones, portable mortar, charmstone, awl fragment, worked bone, fauna, shell,baked clay, vitrified clay, fire cracked rock, charcoal and historic debris. A tentative chronological placement of the site was established by Bard et al (1985; p. 7) based upon the artifactual material, specifically on projectile point typologies, charmstone, shell beads and obsidian hydration dating. The eastern portion of the site appears to date from the Early Horizon, Late Phase 1 (ca. 2000 BC to 1500 AD). The majority of the artifacts were attributed to the Middle/Late Phase 1 of the Late Horizon (ca. A.D. 100 to A.D. 800/1100) (Bard, Busby, Kobori, and Findlay 1984). The variety of artifacts suggested several aboriginal activities taking place on the site. Hunting, food processing, basket making, stone tool manufacturing, probable shellfish collecting and possible leather and woodworking were all activities indicated by the archaeological research.

In 1987 a subsurface testing program by David J. Powers and Associates (Harmon et al; 1987), was conducted to determine the extent of CA-SCl-6 within the Fairway Glen Project area. The project area consisted of the 105 acre Fairway Glen Golf course, which is to the west of the Hetch Hetchy Project area, next to the Guadalupe River. CA-SCl-6 was originally designated by Nels C. Nelson (Nelson 1909) as part of a complex of three village sites on the bank of the Guadalupe River. The Prehistoric sites of CA-SCl-5, -6, -7 were originally listed as Mounds 339, 340, and 341. They were classified as "occupation sites" by Loud in 1912 (Loud 1912b). Channelization of the river, construction of the

levee, and construction of the golf course have all served to disturb the site in historic times. Harmon defined the site as a midden. The midden deposit consisted of charcoal flecks, baked and vitrified clay, fire cracked rock, various shellfish remains (especially Cerithidea californica), faunal remains and chipped and groundstone artifacts. Isolated human bone fragments were found along the Guadalupe River levee and on the surface of other sites in the vicinity. Harmon et al (1987) suggests contrary to Cartier et al (1980, 1981) and Fenega (1981), that it is unlikely CA-SCl-6 and CA-SCl-447 were one site.

Construction monitoring of the City of Santa Clara pump station located next to the Hetch Hetchy pipeline on the west bank was conducted by Cartier (1989). No archaeological material was observed.

Cartier et al (1990, Volume I) implemented an archaeological program for the Lick Mill Boulevard Project within CA-SCl-6w (on the west side of the river). This was the most recent, and by far the largest research conducted at this site complex. The site was defined as a large prehistoric Native American occupation site with the cemetery located within the deposit. SCl-6w has a midden deposit characterized by charcoal, various shell-fish, faunal remains, and lithic and groundstone artifacts. One hundred and forty human burials were recovered from the project area. The excavation of a large burial complex afforded valuable information on the Native American culture at the time of the funeral rituals. Artifacts associated with the burials contributed to the greater knowledge of the Ohlone people. A chronology for the burials and the occupation site was established through analysis of diagnostic artifacts, obsidian hydration and radiocarbon dating. The dates range from 900 to 1300 years ago, and the site has clear evidence of several deaths induced by prehistoric warfare. The burial complex, in reference to the Hetch Hetchy pipeline project, is located far to the west, northwest of the subject area.

Surface Survey: A "general surface reconnaissance" was conducted by the Principal Investigator on all open land surfaces in the subject area. A "controlled intuitive reconnaissance" was performed in places where burrowing animals, exposed banks and inclines, and other activities had revealed subsurface stratigraphy and soil contents. The project area includes the Guadalupe River channel. Visibly was limited as a result of heavy vegetation growth with vegetation and water in the river bed. Levee and pipeline construction in the past on both sides of the river has heavily disturbed the native soil surface. Exposed native soil areas consisted of a silt-rich loam. Rock type found within the project area included small amounts of sandstone and chert gravel. It is likely that much of this was imported into the area for previous levee roadway and other construction activities. No prehistoric or historic cultural resources were found during the surface reconnaissance.

CONCLUSION AND RECOMMENDATIONS

Based upon the archival research and the surface reconnaissance, it is concluded that the proposed project would have no direct or indirect impact on cultural resources. Although Cartier (1989) did not find any archaeological material in monitoring of the pump station, it is recommended that the project be monitored because of its close proximity to a number of recorded sites. In the event, however, that prehistoric traces (human remains, artifacts, concentrations of shell/ bone/rock/ash) are encountered, all construction within a fifty meter radius of the find should be stopped, the Planning Department notified, and an archaeologist retained to examine the find and make appropriate recommendations.

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Cartier, R.

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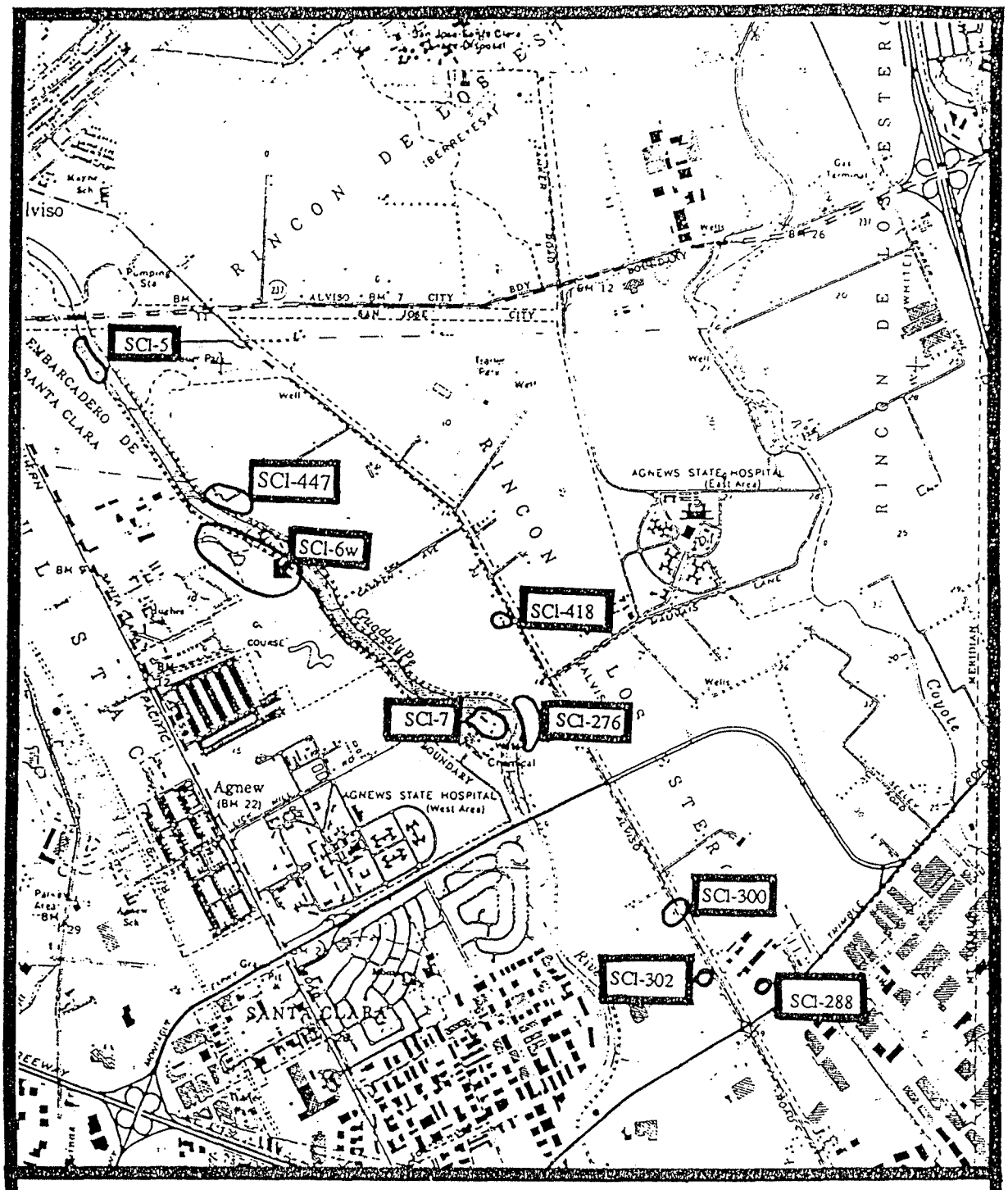
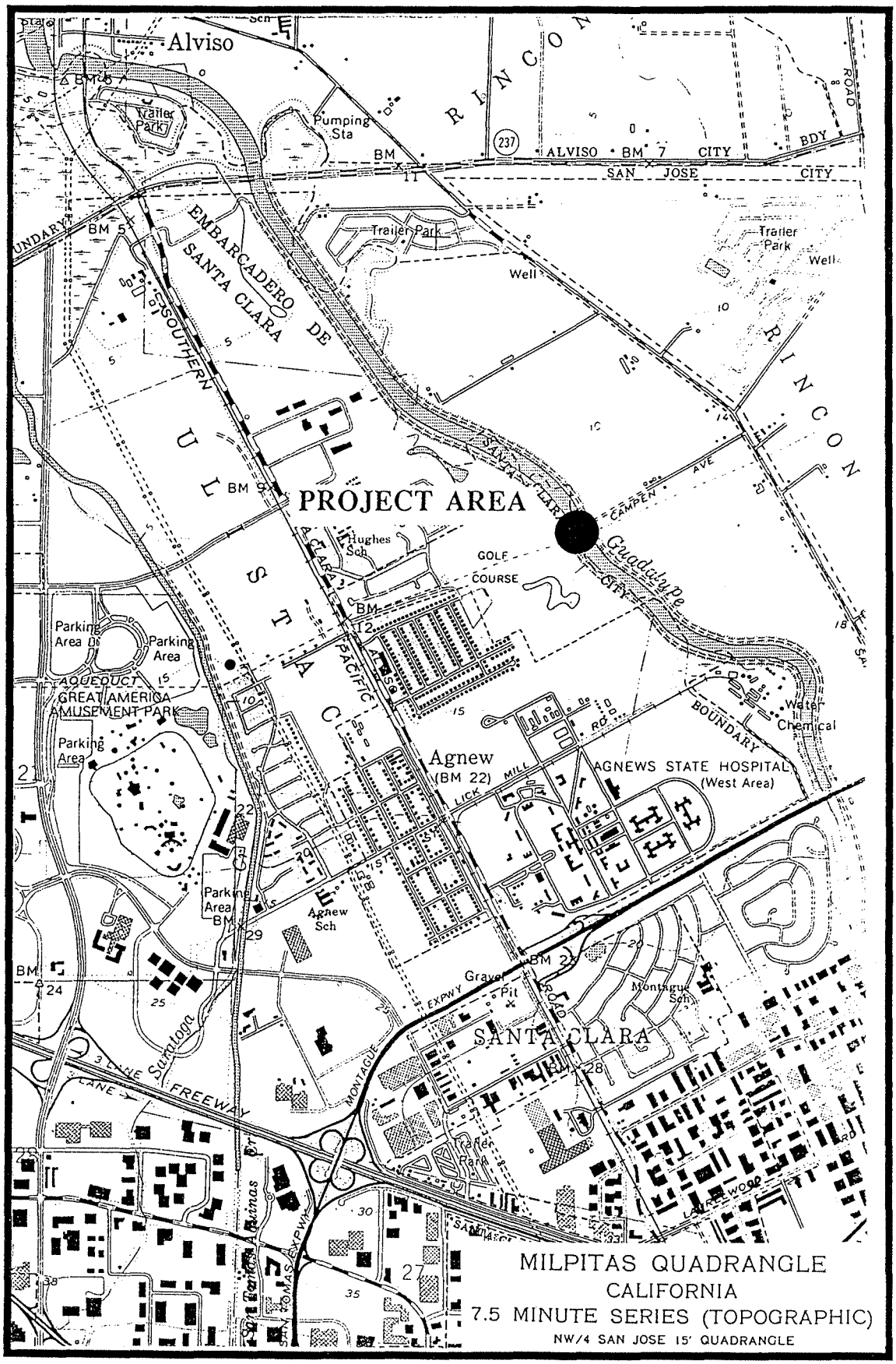
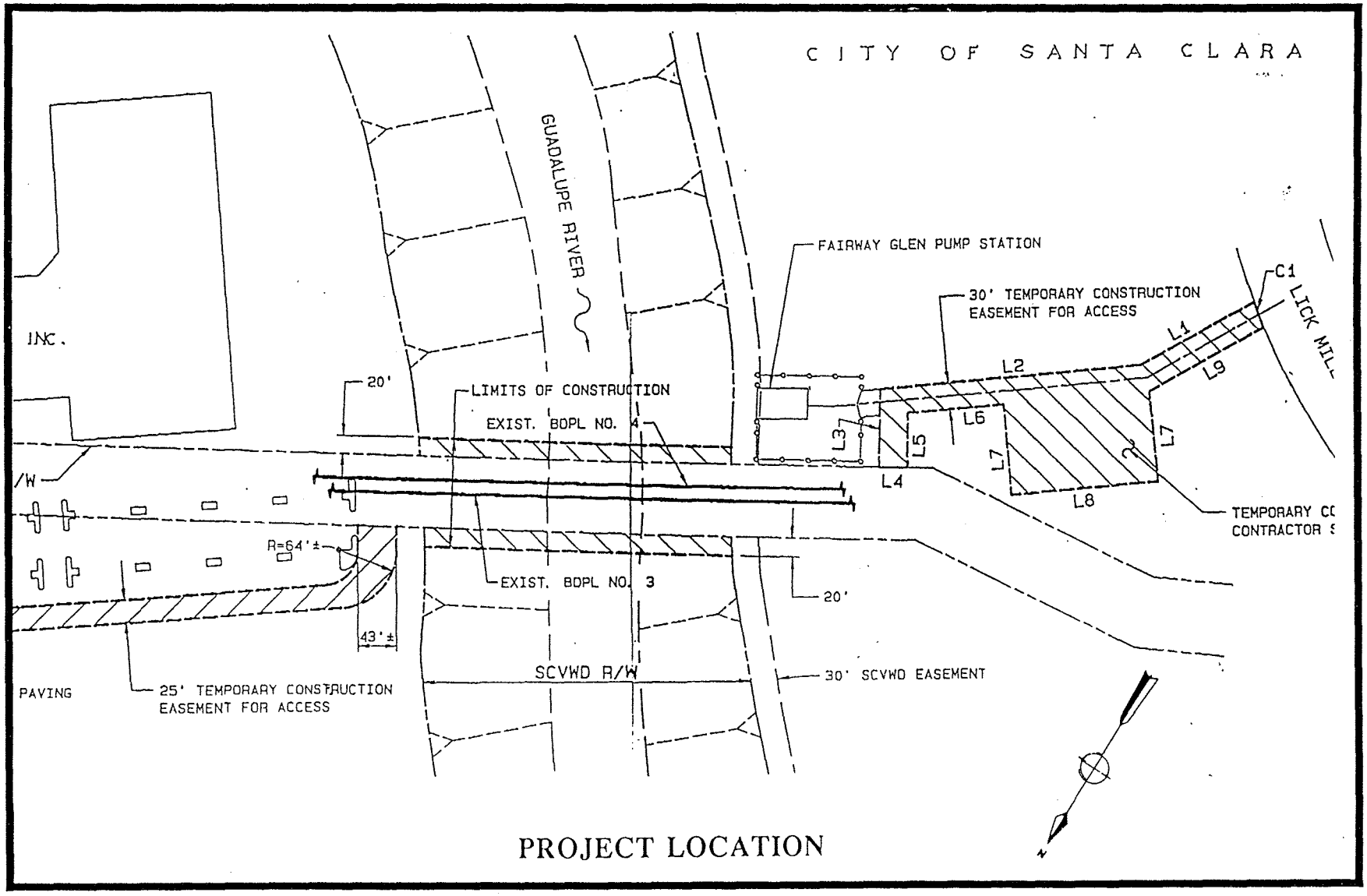


LOCATION OF LOCAL SITES ALONG THE
GUADALUPE RIVER AND NORTH FIRST STREET


Alviso
Trailer Park
Pumping Sta
RINCON
237
ALVISO
BM 7
CITY
SAN JOSE
CITY
BDY
ROAD
Trailer Park
Well
Trailer Park
Well
EMBARCADERO DE SANTA CLARA
SOUTHERN
PACIFIC
BM 5
BM 9
PROJECT AREA
SANTA CLARA
CAMPEN AVE
Guadalupe
CITY
Hughes Sch
GOLF COURSE
BM 12
Parking Area
Parking Area
AQUEDUCT
GREAT AMERICA AMUSEMENT PARK
Parking Area
Agnew
(BM 22)
MILL
LICK
AGNEWS STATE HOSPITAL
(West Area)
BOUNDARY
Water
Chemical
Parking Area
BM 29
Agnew Sch
BM 24
Gravel Pit
EXPWY
BM 21
Montague Sch
SANTA CLARA
Saratoga
3 LANE FREEWAY
MONTAGUE
Trailer Park
LAKEWOOD
SAN TOMAS EXPWY
MILPITAS QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
NW/4 SAN JOSE 15' QUADRANGLE



PROJECT LOCATION

APPENDIX F.
TEMPORARY STREAM DIVERSION AND EROSION CONTROL RECOMMENDATIONS SFWD BDPL PROJECT SITE

TEMPORARY STREAM DIVERSION RECOMMENDATIONS

The diversion of stream flow in the Guadalupe River during construction will be conducted according to all recommendations and conditions specified in the project's Streambed Alteration Agreement (California Dept. of Fish and Game) and the Department of the Army Section 404 Permit. The following measures will be undertaken to minimize disturbance from stream diversion.

1. Stream flow will be diverted around the construction area by constructing a temporary channel around the work area. This will entail the placement of temporary berms at the upstream and downstream limits of work. These berms would serve to divert stream flow into a pipe of sufficient size to allow water flow and prevent direct flow of water into the construction area. The temporary berms will be constructed from excavated channel material and shall be removed or spread in the channel following construction. The temporary water diversion pipe must be of sufficient size such that fish passage both upstream and downstream is not impeded.

2. If groundwater seepage at the construction site necessitates actively de-watering the site then the discharge of silty water shall be into a silt-settling basin away from the stream. Silt settled out in the basin shall be disposed of outside of the riparian corridor. Typically such silt settling basins are constructed of a ring of straw bales staked into the ground, with a ring of filter fabric lining the interior side of the straw bale ring. This set-up can be installed in upland areas adjacent to the stream. If the silt-settling basin is located within the riparian corridor (from top of bank to top of bank) straw bales, filter fabric and silt shall be removed and disposed of off-site following construction.

3. Work in the stream channel shall not be allowed between October 15 and April 15 unless specifically authorized by the Department of Fish and Game.

4. The stream channel shall be returned to its original condition following construction.

EROSION CONTROL RECOMMENDATIONS

Temporary erosion control measures will not be necessary if the project uses temporary berms and a bypass culvert, or a similar system, for isolating stream flow from the construction area. Following the completion of construction permanent erosion control measures must be taken to ensure that minimal sediment from the project area is allowed to enter the stream channel. The following erosion control measures are recommended:

1. All bare soil slopes shall be compacted (track-walked) by 2 passes by a tracked vehicle moving up and down the slope to create small ridges running along the slope's contours. These ridges will help retain soil and seed.

2. A seed and mulch mix shall be applied evenly to all bare soil areas outside of the low flow channel, as follows:

   a. Seed shall be applied between September 1 and January 29. This seed mix typically germinates within 14 to 20 days following rainfall.

b. The seed mix shall comprise the following species and seeding rates:

Common Name	Scientific Name	Seeding Rate
California brome	*Bromus carinatus*	10 lbs./acre
California barley	*Hordeum californica*	14 lbs./acre
Cal. Slender Wheatgrass	*Agropyron trachycaulum* var *majus*	8lbs./acre
Blue wildrye	*Elymus glaucus*	8 lbs./acre

Note: If seeds are applied by hydroseeding the seeding rates cited above shall be doubled.

c. No fertilizer application is required for the seed mix proposed.
d. Clean bedding straw shall be evenly spread across the site following seeding. The straw shall be applied at a rate of 2 tons per acre.
e. Following the spreading of straw an organic tackifier, such as M-Binder, shall be sprayed over the straw using the techniques and application rate specified by the manufacturer.
f. A source for the erosion control materials prescribed above is Pacific Coast Seed, 7074 D Commerce Circle, Pleasanton, CA 94588, (510) 463-1188.

CONSTRUCTION MONITORING

It is highly recommended that the District provide a construction site monitor to ensure that the stream diversion and erosion control measures described in this report are properly implemented. The monitor should visit the site weekly during periods of active construction, and prepare individual site visit reports as well as a monthly site visit summary report.